State of Alaska
Coastal Impact Assistance Program

APPENDIX B-1.1

Direct to State Funding: State Agency Initiated Projects

Approved Project Descriptions

Tier 1 and Tier 2 Projects

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State of Alaska

Coastal Impact Assistance Program
Approved Project Descriptions
Proposed by

Direct to State Funding: State Agency Initiated Projects

The following list of projects were approved as part of the 2008 Alaska CIAP Plan and the March 2010 Amendment and remain unchanged with this Fall 2010 Amendment. The most current approved project descriptions are provided.

STATE OF ALASKA - TIER 1 PROJECTS	
AKCIAP_SOA_T1-01	Stikine River Mining Activity Risk Assessment
AKCIAP_SOA_T1-02	ShoreZone Mapping
AKCIAP_SOA_T1-03	Fish Monitoring Program
AKCIAP_SOA_T1-04	Current Measurements in Potential Oil Exploration and/or Development Areas of the Landfast Ice Zone of the Chukchi Sea
AKCIAP_SOA_T1-05	Matanuska-Susitna Trail Rehabilitation and Wetland Restoration
AKCIAP_SOA_T1-06	Mertarvik Community/Waterfront Strategic Management Plan
AKCIAP_SOA_T1-07	Newtok Environmental Site Inventory and Assessment
AKCIAP_SOA_T1-09	Coastal Processes Seminars
AKCIAP_SOA_T1-11	Alaska Monitoring and Assessment Program - Chukchi Sea Coastal Survey
AKCIAP_SOA_T1-12	Monitoring Steller Sea Lions at Remote Sites in the Bering Sea
AKCIAP_SOA_T1-13	Hydro-acoustic Monitoring of Ambient Noise and Marine Mammals in the Chukchi Sea
AKCIAP_SOA_T1-14	Local and Regional Spill Prevention and Response Planning
AKCIAP_SOA_T1-15	ADF&G Special Area Notebook
AKCIAP_SOA_T1-16	Kuk River and Kugrua River Stream Surveys - Baseline Fish Data Collection
AKCIAP_SOA_T1-17	Imagery Basemap and Elevation Model for Alaska Coastal Districts
AKCIAP_SOA_T1-19	Community Mapping for Southeast Alaska
AKCIAP_SOA_T1-20	Evaluating the Distribution and Status of Polar Bears to Improve Oil and Gas Mitigation in the Chukchi Sea
AKCIAP_SOA_T1-22	Anadromous Cataloging in Bristol Bay and Cook Inlet-Shelikof Drainages
AKCIAP_SOA_T1-23	Subsistence Fish Surveys and Life History Research – Chipp/Ikpikpuk, Topagoruk, Meade and Inaru river drainages
AKCIAP_SOA_T1-24	Hydrocarbon Contaminant Assessment of Pribilof Island Rock

	Sandpipers in Cook Inlet
AKCIAP_SOA_T1-25	Development of Inventory/Action Plans for Pollution from Eroding Contaminated Sites, Landfills, and Dumps
AKCIAP_SOA_T1-26	Population Delineation, Distribution, and Seasonal Habitat Use of the Alaskan Breeding Population of Steller's Eiders
AKCIAP_SOA_T1-28	Implementation of StreamStats for the Cook Inlet Area, Alaska
AKCIAP_SOA_T1-29	Offshore Oil/Gas Wastewater Study
STATE OF ALASKA TIER 2 PROJECTS	
AKCIAP_SOA_T2-05	Alaska Monitoring and Assessment Program (AKMAP) Alaska Bering Sea Coastal Survey
AKCIAP_SOA_T2-06	Mercury Deposition Monitoring in Coastal Alaska
AKCIAP_SOA_T2-07	Knik River Public Use Area Erosion Control
AKCIAP_SOA_T2-08	Kachemak Bay Drainage Basin Sustainable Access Routes Reservation and Improvement
AKCIAP_SOA_T2-09	Alaska Coastal Management Program Implementation Workshops
AKCIAP_SOA_T2-10	Marine Debris Clean-up
AKCIAP_SOA_T2-11	Yukon-Kuskokwim Delta Community Subsistence Observation Network
AKCIAP_SOA_T2-12	Assessment of Ice Seal Populations Using Biological Samples from the Subsistence Harvest in Alaska
AKCIAP_SOA_T2-13	Monitoring the Harvest of Four Species of Ice Seals in Alaska
AKCIAP_SOA_T2-15	Identification and Characterization of Archaeological and Historical Sites for Conservation Planning in Coastal Alaska
AKCIAP_SOA_T2-16	Klawock Estuary Restoration
AKCIAP_SOA_T2-17	Chukchi Sea and Norton Sound Community Observation Network
AKCIAP_SOA_T2-18	Kenai Forest Road Condition Survey
AKCIAP_SOA_T2-19	Crooked Creek SRS Bank Restoration
AKCIAP_SOA_T2-20	Use of Beach Wildrye to Stabilize Coastal Berms
AKCIAP_SOA_T2-21	Monitoring Storm Surge in Western Alaska
AKCIAP_SOA_T2-23	Erosion Protection and Stream Bank Restoration

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF HABITAT MANAGEMENT AND PERMITTING

PROJECT TITLE: Stikine River Mining Activity Risk Assessment

Note: This project was approved as part of the 2008 Alaska CIAP Plan. The only amendment is a change to the project contact.

PROJECT CONTACT

Contact Name: Jackie Timothy
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PROJECT LOCATION

The Stikine River. The Stikine River is approximately 335 miles long, in northwestern British Columbia, Canada, and southeastern Alaska, in the United States. The project would occur in the Stikine River and delta located opposite Mitkof Island, approximately 25 miles north of Wrangell, Alaska.

PROJECT DURATION

1 year

ESTIMATED COST

Spending Estimate ($)	
TOTAL	**Year 1**
58,000	58,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
58,000	0	58,000	0	0

PROJECT DESCRIPTION

The Stikine River delta is a haven for over 120 species of migratory birds in the spring and fall, including over 150,000 shorebirds. In April, the second largest concentration of eagles in the world occurs when as many as 1,600 arrive to feed on the annual Euchalon run. The Stikine River supports a major transboundary salmon fishery and the annual harvest of Dungeness crab on the Stikine flats exceeds 400,000. The Stikine River delta is a highly productive ecosystem supporting a diverse assemblage of fish and wildlife resources.

The Stikine River drainage includes areas with rich mineral reserves; plans to develop mineral resources (copper and precious metals) in the Galore Creek[1] and Schaft Creek drainages have recently been proposed. Natural background loading of metals occurs in some of the streams in the Stikine River drainage.

The State reviews and evaluates proposals for pending hard-rock mines to identify and predict possible changes to aquatic habitats with the goal of ensuring the proper protection of fish and wildlife resources. To conduct a thorough review, it is necessary to evaluate existing data and to identify and request additional baseline data on water quality before project construction commences. Baseline data from the Stikine drainage must include sampling of the river and its delta. We propose to contract with an individual with expertise in biogeochemistry and entomology to review the status of current and future mining proposals with the intent of preparing analyses of the existing baseline data and to identify what additional data are needed. The focus of this review and baseline data analyses would be to determine what constitutes an adequate baseline sampling program (parameters to measure, frequency of sampling, quality control and quality assurance) to form the basis for detecting any changes that may occur over time, and how those changes might affect valuable fish and wildlife resources in the Stikine River and its delta. The Environmental Effects Monitoring (EEM) programs for both mining projects will also be reviewed to ensure the ability to detect changes against baseline data, verify predictions of the environmental effects assessment and compliance with respect to discharge limits. Infrastructure associated with the construction of the Galore and Schaft Creek mines will likely increase the potential for more mineral development in the Stikine River drainage. The review of baseline and environmental effects monitoring programs by an individual with expertise in entomology and biogeochemistry will result in recommendations to ensure the protection of coastal resources.

MEASURABLE GOALS AND OBJECTIVES

The outcome of this project will be a technical report documenting existing baseline data specific to water quality, sediments, and selected aquatic organisms that may affect the various fish and wildlife resources in the Stikine River Delta. Technical Report data would be used to determine if adequate baseline data exists or whether additional baseline work is needed. If additional baseline data were needed, the report would identify the parameters to measure and the frequency of sampling.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP Authorized Use Number 1, *"Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands,"* because it will provide baseline data analyses. Knowledge of existing conditions in the Stikine River, through acquisition of baseline data, is essential to evaluating the effects of development projects in the area, and is essential to developing appropriate measures to protect the important coastal resources of the Stikine River from project effects. This project will identify the existing gaps in baseline data and identify the data needed to develop measures to effectively protect coastal

[1] In late November 2007, it was announced that construction on the Galore Creek project has been suspended, but given the high mineral potential, it is likely that a future mining proposal will emerge. In 2008 NovaGold and Teck Cominco announced an aggressive review of the project with the objective of identifying an alternative development strategy that would allow the partners to resume construction and advance Galore Creek toward production.

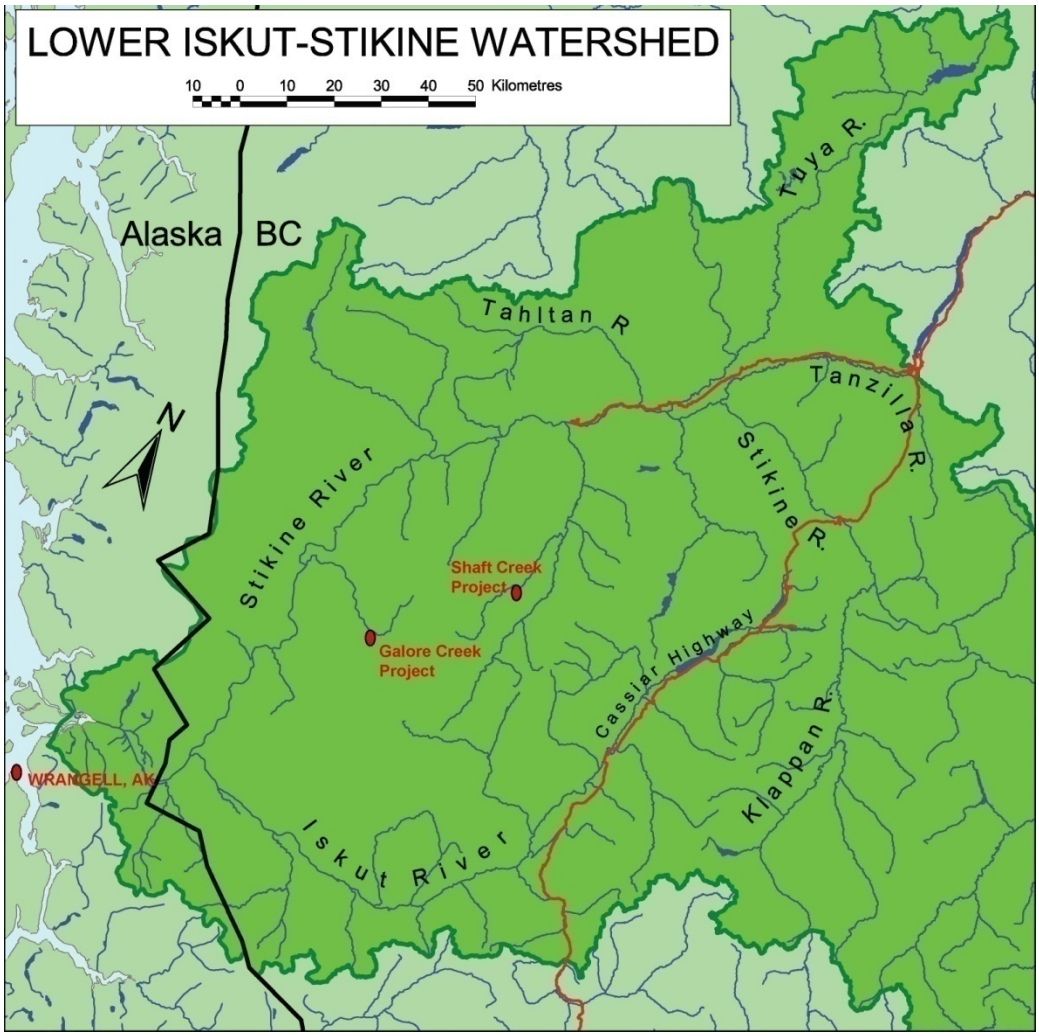
resources from anticipated mines, such as the Galore and Shaft Creek mines, and other potential development projects in the Stikine River watershed. Attachment E of The Pacific Salmon Treaty commits both the United States and Canada to "maintain adequate water quality and quantity." The treaty provides the State of Alaska the authority to comment on projects located in Canada if they are within the Stikine watershed and to develop project stipulations that would protect coastal resources downstream, within Alaska's coastal area.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The project has been discussed with National Marine Fisheries staff. Results of this project will be shared with Federal and State agencies for use in future comments on proposed mining activity.

COST SHARING OR MATCHING OF FUNDS

CIAP funds will not be used for cost sharing or matching purposes.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Tahltan R
Tuya R.
Tanzilla R.
Stikine R.
Shaft Creek Project
Galore Creek Project
Cassiar Highway
Klappan R.
WRANGELL, AK
Iskut River

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF COASTAL AND OCEAN MANAGEMENT

PROJECT TITLE: ShoreZone Mapping Project

Note: This project was approved as part of the 2008 Alaska CIAP Plan. The funding per allocation year of CIAP has changed. Additionally, while CIAP funds will continue to support the maintenance and public distribution of the ShoreZone data, CIAP funds will not be used to update the NOAA website as proposed in the 2008 Alaska CIAP Plan.

PROJECT CONTACT

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PROJECT LOCATION

See attached maps

PROJECT DURATION

4 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
800,000	195,000	200,000	205,000	200,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
800,000	175,000	20,000	605,000	0

PROJECT DESCRIPTION

DCOM has been involved in this ongoing project to conduct research on biological resources and geological features of the Alaska shoreline using the ShoreZone Inventory methodology pioneered by Coastal and Ocean Resources, Inc. (CORI), of Sidney, British Columbia. ShoreZone inventory of a designated shoreline is conducted in two phases. The first phase, imaging, involves aircraft and on-board science crew and is conducted in a very brief window of time determined by hours of daylight, tide cycle, and weather. The second phase, interpretation

(the mapping component, with associated production of spatial and other data) is conducted over a period of months. To date, approximately 50% of the 44,500 miles of Alaskan coastline has been flown and imaged. The ultimate goal is to develop ShoreZone imagery and mapping of the entire Alaska coastline. The attached map shows the areas yet to be completed. CIAP funding will be used to image and map at least 8,000 kilometers (km) of coastline not yet completed. ShoreZone is a coastal habitat mapping and classification system in which georeferenced aerial imagery is collected specifically for the interpretation and integration of geological and biological features of the intertidal zone and nearshore environment.

Oblique low-altitude aerial video and digital still imagery of the coastal zone is collected during summer low tides (zero tide level or lower), usually from a helicopter flying at <100 m altitude. The flight trackline is recorded at 1-second intervals using electronic navigation software and is continuously monitored in-flight to ensure all shorelines have been imaged.

Video and still imagery are georeferenced. Video imagery is accompanied by continuous, simultaneous commentary by a geologist and a biologist aboard the aircraft. The imagery and commentary are later used in the definition of discrete along-shore coastal habitat units and the "mapping" of observed physical, geomorphic, sedimentary, and biological features in those units. Units are digitized as shoreline segments in ArcView or ArcGIS, and then integrated with the along-shore and across-shore geological and biological data housed in a relational database. Mapped habitat features include degree of wave exposure, substrate type and morphology, sediment texture, intertidal biota, and some nearshore subtidal biota.

Research and practical applications of ShoreZone coastal mapping data and imagery include: natural resource planning and environmental hazard mitigation (e.g. by resource managers in evaluating project impacts); linking habitat use and life history strategy of nearshore fish and other intertidal organisms; habitat capability modeling (e.g. predicting the spread of invasive species); providing regional framework for site-specific shore station surveys; and public use for recreation, education, and outreach, and as a tool for developers during the project planning phase. Other applications include using ShoreZone to model areas sensitive to climate change, and as a tool to support future oil remediation efforts and oil spill response planning, as well as restoration activities, such as possible herring intervention programs like moving spawn to rearing areas.

MEASUREABLE GOALS AND OBJECTIVES

This four year project will:

- Create video and still imagery and, or map 2,000 km annually of coastline in Alaska, with specific areas to be determined from the attached maps.
- Support the maintenance and distribution of this publicly available data.
- Develop a peer reviewed paper on preliminary estuarine classification system for Southeast Alaska.
- Continue field verification through selected site visits.

The video and imagery components of this project must happen in the summer because this is when the lowest tides of the year occur, coupled with adequate vegetation growth for interpreting the biological characteristics along the shore and weather conditions. As such, the schedule will

possibly change, and the determination of which phase(s) of the project will be funded annually will change accordingly. However, the overall project outcomes will remain the same- a combination of imagery and mapping will be generated for 8,000 km of Alaskan coastline.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE
This project is consistent with CIAP Authorized Use Number 1:

> *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetland.*

Because of its scale and complexity, an inventory of the region's coastal habitats has only been feasible with recent developments in photo-electronics and associated mapping methodologies. In order to take conservation, protection, and restoration actions along Alaska's coastline, it is critical to have a baseline inventory of the coastal resources. Traditional ground-based inventory techniques are too costly and time consuming for the approximately 44,500 miles of the entire Alaska coastline.

A complete region-wide database of nearshore features will, for the first time in the state of Alaska, provide baseline data to coastal communities, managers, scientists, and the public, in order to make informed decisions on coastal development, conservation priorities, invasive species abatement, and oil spill response.

Examples of how the ShoreZone imagery and data are currently being applied to conservation and protection of coastal and wetland areas include:

- Determining the placement oil spill response equipment, when timing of boom placement is of the essence to protect sensitive habitats;
- Direct use in coastal development permitting – For the first time in Alaska, all local, state and federal agency representatives have direct access to imagery and data of the proposed project areas in order to make informed decisions surrounding development projects, when travel costs and the remote nature of Alaska's coastline impeded adequate project review. The information will enable resource managers to identify the most critical areas to protect during project review;
- Predicting invasive species habitat on a region wide basis, through habitat modeling of areas that had not been mapped or inventoried;
- One of the State of Alaska's partners in coastal conservation, The Nature Conservancy (TNC), is applying the ShoreZone imagery and data inventory to identify high priority conservation sites. By working with local, state and federal partners, TNC will develop appropriate conservation strategies to ensure the long-term viability of ecologically productive nearshore and estuarine systems of Alaska's coasts by 2010;

These examples lead to protection, restoration, and or conservation of coastal areas through better management of coastal habitat and resources.

One major opportunity to address with this project is to develop a publicly available set of video imagery, thousands of still photos, and a parallel data set for the entire coast of Alaska. The

digital imagery is then made public by NOAA through the National Marine Fisheries website. The ShoreZone partners also have a communications and outreach plan to develop training tools to communicate the utility and applications of the ShoreZone imagery, data, and maps to ShoreZone users, including to Geographic Information Systems (GIS) analysts, oil spill response crews, community and state planners, research scientists, coastal residents, and tourism operations.

This project will result in further development of a tool to assist users in obtaining valuable information online providing baseline biological and geomorphological data, which has been used for natural resource planning, protection and restoration of coastal areas. The base line data will provide critical information in the event of an oil spill. Should a spill occur, the data base will provide the necessary information to identify the habitats most at risk allowing managers to prioritize resources and protect the most critical coastal areas. The data base will also be used to assess impacts to coastal areas after a spill occurs. This assessment is necessary to develop appropriate restoration of damaged areas.

Geophysical information, wave energy exposure, biological banding, substrate types and upland features can all be seen using ShoreZone. ShoreZone goes further providing images of potentially affected shoreline to allow for detailed planning of boom placement, staging areas collection beaches.

Southeast Alaska Petroleum Resource Organization (SEAPRO) used ShoreZone during a September 2007 exercise for US and Canada spill response trainees for identification of sensitive habitat areas, potential staging areas, and docking locations. Also, SEAPRO used the ShoreZone imagery and data during an oil spill, which occurred off southwest Prince of Wales, in February 2008. When the spill was reported at 1:00 am, staff immediately accessed the ShoreZone imagery on the internet. The imagery provided valuable coastal resource information for planning response activities, including areas appropriate for landing boats and sensitive habitats that should receive priority for protection.

A third example of direct application of the ShoreZone imagery and data is the use of this information in restoration planning efforts in Prince William Sound. Zach Nixon from Research Planning, Inc. pointed out that they used the 2004/2007 videography acquired by the ShoreZone mapping team as an integral part of the 2007-2008 Exxon Valdez Oil Spill Lingering Oil Study. He noted that “the videography was used to identify and delineate fine-scale geomorphic features thought to be related to the persistence of subsurface oil from the Exxon Valdez Oil Spill in portions of Prince William Sound in south-central Alaska. The videography - acquired at consistent shoreline offset and altitude - enabled this process to be rapidly completed. Fieldwork to acquire these data would have been prohibitively expensive. As such, access to this extremely valuable resource will hopefully enable more accurate evaluation of the distribution of remaining subsurface oil, and a better understanding of why and where oil persists in the environment.” This leads to protection, restoration, and or conservation of coastal areas through better planning and implementation of oil spill response, which improves the health of coastal habitat and resources.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

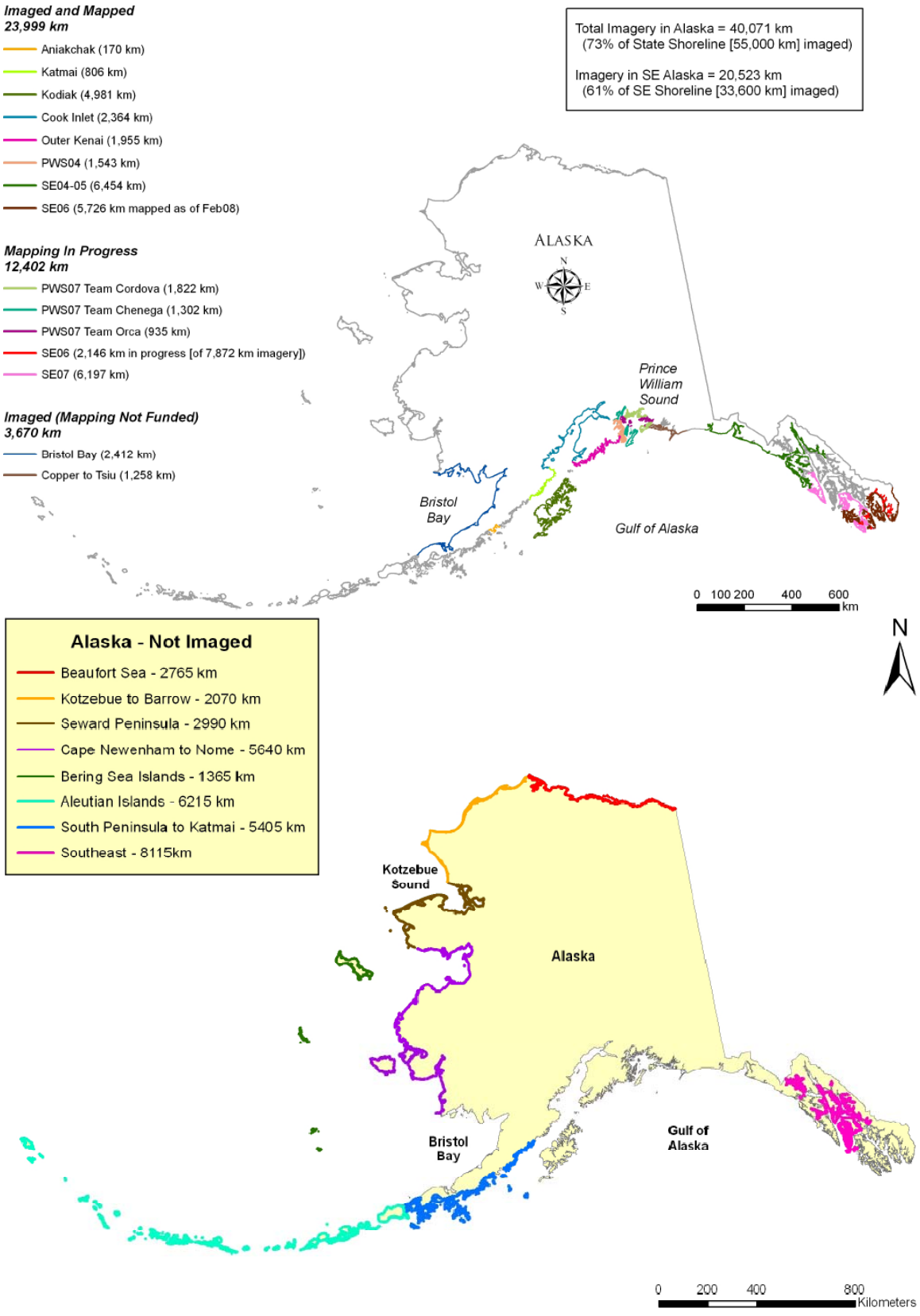
Other partners, such as the Alaska State Department of Fish and Game, NOAA, and the Nature Conservancy have contributed time and money to the ShoreZone mapping project in the State of Alaska. These parties also meet annually for a ShoreZone steering committee meeting to discuss important issues related to the project (upcoming site priorities, e.g.) For a list of all ShoreZone partners in Alaska, visit http://www.coastalandoceans.com/shorezone.html.

The final ShoreZone product is publicly available and maintained by NOAA at http://www.fakr.noaa.gov/maps/szintro.htm.

COST SHARING OR MATCHING OF FUNDS

CIAP funds will not be used for cost sharing or matching purposes.

SHOREZONE COASTAL HABITAT MAPPING PROGRAM IN ALASKA



STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT TITLE: Fish Monitoring Project

Note: This project was approved as part of the 2008 Alaska CIAP Plan. Only the funding per allocation year of CIAP has changed.

PROJECT CONTACT

Contact Name: Kristin Ryan, Director, Division of Environmental Health
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E-mail Address: kristin.ryan@alaska.gov

PROJECT LOCATION

The fish monitoring program involves sampling of several species of fish from across the State of Alaska. Samples will be collected from coastal, estuary and marine areas throughout the state.

PROJECT DURATION

This is an on going project. However, the portion to be funded by CIAP is 3 years.

ESTIMATED COST

This is a continuing program with estimated annual costs of $1 million, although the number of samples collected and analyzed can be reduced depending on funding levels. The following CIAP funding levels are proposed. The Alaska Department of Environmental Conservation (DEC) will seek funding from other sources to maximize the number of samples collected and analyzed.

Spending Estimate ($)			
TOTAL	**Year 1**	**Year 2**	**Year 3**
1,600,000	700,000	600,000	300,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
1,600,000	0	700,000	900,000	0

PROJECT DESCRIPTION

This project will assess the impact of environmental contaminants on the coastal and marine ecosystems in Alaska's oceans by testing muscle tissue from a variety of fish species.

The primary source of these contaminants is long range transport from distant sources, primarily industrial regions of Asia. Atmospheric conditions, weather patterns, and ocean currents carry the contaminants such as PCB congeners, dioxins, furans, brominated fire retardants (PBDEs), and heavy metals such as mercury. However, local contamination can occur secondary to industrial development projects; mining, solid waste disposal sites and accidental discharges. The adverse biological effects on the marine ecosystem from exposures to these contaminants can range from altered growth and development, reduced reproductive capacity to decreased resistance to infection and disease. They will also impact the endangered marine mammals and seabirds that feed on marine life and specifically the fish.

The Alaska Department of Environmental Conservation has been conducting opportunistic surveillance of these contaminants in various species of fish for the past five years. Fish have been chosen because they represent the top of the food marine ecosystem and tend to bioaccumulate these contaminants; and fish can be used as a sensitive screening or biomonitoring tool for the presence of these chemical compounds. The initial data illustrate some trends and regional differences, but there is not enough information yet to evaluate the significance of these findings. The need for additional baseline data is critical for trend analysis in future years. The impacts of this research will also help us understand the influence of several factors including climate change on contaminant deposition and movement in the coastal ecosystem.

Some of the species to be analyzed are: halibut, pacific cod, lingcod, sablefish, rockfishes, Pollock, Sheefish, burbot, white fishes and northern pike. Coastal and marine areas of specific interest include: Kotzebue, Norton Sound, Yukon River, Kuskokwim River, Bristol Bay, Bering Sea, Dutch Harbor/Unalaska, Kodiak, Cook Inlet, Prince William Sound, Cordova, Juneau and Ketchikan. Global Positioning Satellite coordinates will be recorded for each collection site and mapped on a grid. This will allow for a spatial comparison of the fish populations as well as accurate re-sampling in the future.

Collaborative partners collecting fish include: International Pacific Halibut Commission; National Oceanic Atmospheric Administration (NOAA) ground fish observer program, the Alaska Monitoring and Assessment Project (AKMAP), Alaska Department of Fish and Game (F&G), as well as commercial, recreational and Native fisherman. All fish samples will be shipped to the Environmental Health Laboratory (DEC EH) to be processed. A lab technician will enter all physical data into a database, remove the otoliths (for aging the fish) and fillet the fish. The skinless fillets will be homogenized and put into sample containers. The heavy metals (lead, total arsenic, total chromium, cadmium, nickel and methyl mercury) will be analyzed at the DEC EH lab. A portion of the samples will be sent to a contract laboratory for analysis of PCB congeners, pesticides, dioxins, furans, PBDE, and inorganic arsenic.

Funding would be used to collect samples, ship them to the DEC EH Lab, and analysis of the tissue for chemical contaminants. A portion of funds will be used to pay a contract laboratory to conduct specialized testing mentioned above.

This project will help satisfy the vital need to collect data about environmental contaminants in Alaska's oceans and coastal ecosystems. There are currently no studies in Alaska that are

evaluating contaminant exposure of fish in all major marine water bodies surrounding the state. Monitoring for contaminants by using fish as a bio-indicator of exposure will produce data on contaminant concentration, including geographic identification, about areas throughout Alaska's marine environment.

Working with toxicologists in the Department of Health and Social Services (DHSS) and biologists at F&G to evaluate the data, we can determine if the current level of contaminants in the fish have any implications to other components of the coastal ecosystem. The data can be used by wildlife biologists to compare the environmental quality guidelines that have been developed by various organizations (International Joint Commission, US EPA, and Environment Canada) for the protection of aquatic life and fish eating wildlife. These guidelines have been derived using estimated contaminant concentrations rather than real data. Information from this program could be used to identify the threshold for effects in sensitive fish eating wildlife species as well as the specific bioaccumulation and biomagnification rates of particular substances.

The data are being recorded in a database at the DEC EH Laboratory. Currently a new database is being developed to provide better access to the information. The new database will include a unique code number to link the sample data, the geographic location, species of fish, age, length and weight. If results indicate elevated contaminant levels, additional samples will be collected and analyzed to confirm the findings. This information will be available to other researchers and others interested in expanding our understanding in these areas.

The data and current information are available on the DEC website: http://www.dec.state.ak.us/eh/vet/fish.htm . Results of the study will also be available to the public via written publications/reports and in town/community meetings. In addition, the data would also be presented at informational meetings with other organizations such as Alaska Forum on the Environment, and the Native American Fish and Wildlife Association.

MEASURABLE GOALS AND OBJECTIVES

The measurable goals and objectives are the same for each of the three project years.

1. A computer database information system that will provide Alaska marine and coastal information on contaminants in a manner that is readily useable to state, federal local and tribal agencies, non-governmental organizations and the public.
2. Baseline data on the level of contaminants provided in a geographic orientation of the marine and coastal habitats. This information can be used to identify the presence of any health risks to the wildlife in these habitats and the human populations residing nearby. It will also be helpful in identifying and tracking the possible source of the contaminants.
3. A clearinghouse of information of the current research being conducted in Alaska allowing collaboration between research partners and identify knowledge gaps in order to allow the state to establish and advocate an overall research plan. This will also encourage research partners to use common analytical methods and reporting procedures so the results of different studies may be easily compared and consolidated.
4. Annual reports of project activities and findings including analysis and findings on species, temporal and areal bases.

CIAP AUHORIZED USE

This project is consistent with CIAP authorized use #1:

> *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands*.

This project will yield information on levels of contaminants in fish species. That information can be used by resource managers to initiate steps to address sources and to reduce contamination and thereby protect fish and the wildlife that consume fish, and to take steps to protect and restore coastal areas and wetlands affected by the presence of persistent pollutants.

Local sources, such as mines, other industrial developments, and abandoned military sites are potential sources for a contaminant load in any given habitat. The adverse biological effects from exposures to these contaminants can range from altered growth and development, reduced reproductive capacity, and decreased resistance to infection and disease. They can also add stress to endangered marine mammals and seabirds that feed on these fish. The project has collected samples from estuaries that are impacted by surface water from historic and recent industrial activity such as oil drilling platforms in Cook Inlet, to monitor the impact on the ecosystem. This data is being used by state and local communities to evaluate the safety of the industrial activity on their coastal area. This work will help to protect and restore coastal areas and wetlands affected by the presence of persistent pollutants.

With existing data, the project has already identified regional differences in contaminants found in marine fishes across the Aleutian Islands. We have developed a statistically sound sampling method in collaboration with the International Pacific Halibut Commission to better understand those differences in accumulation. With more data, the local communities will be able to focus on protecting and conserve more vulnerable marine estuaries.

COORDINATION WITH OTHER STATE AND FEDERAL RESOURCES OR PROGRAMS

The concern about the impact of environmental contaminants on coastal marine ecosystems has been growing for sometime and researchers are beginning to focus more attention on Alaska due to the added impact of global warming. However, coordination among projects is sometimes lacking. The main concern that needs to be addressed is method usage. The data is not comparable if researchers use different analytical methods for detection. As part of this project, DEC will work with other agencies and organizations performing contaminant research to encourage the use of standard analytical methods and reporting levels so the results from various studies can be easily consolidated and compared to help direct future work understanding the coastal ecosystems of the state. We will also work to identify knowledge gaps in the current research projects to establish and advocate a collaborative effort to fill those needs.

Through DEC's collaborative efforts, the Fish Tissue Monitoring Program has avoided duplication of existing projects and provided data to other state and federal agencies as well as local communities concerned about contaminants in the coastal habitat. We have also established a list of contacts and links to information on research that is currently being conducted in Alaska

by other state, national and Tribal organizations. Through these contacts, we know that no current studies are evaluating the concentration of environmental contaminants in fish to assess the marine and coastal habitats on a spatial statewide basis. We have made great efforts to inform other researchers, especially scientists at the University of Alaska, and the public of the extent of our work by posting information on the DEC web page and making frequent presentations.

Over the past five years, we have worked closely with our federal and state partners. This work is supported specifically by NOAA, The Environmental Protection Agency (EPA), the Fish and Wildlife Service (FWS), the International Pacific Halibut Commission (IPHC), Alaska DHSS, and Alaska F&G. We have established scientific protocols for collecting, processing and chemical analysis of samples that have been peer reviewed by Alaska DHSS, Alaska DF&G, NOAA and the EPA. Samples are predominantly collected by the ADF&G, IPHC and the NOAA Ground Fish Observer Program assuring the collection of high quality fish samples. The program has received funding from many of these partners over the years, which is a testament to their involvement and support.

COST SHARING OR MATCHING OF FUNDS

CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT TITLE: Current Measurements in Potential Oil Exploration and/or Development Areas of the Landfast Ice Zone of the Chukchi Sea.

Note: This project was approved as part of the 2008 Alaska CIAP Plan. Due to changing timeframe and logistics support the location of this project has been changed from the Alaskan Beaufort Sea to the Chukchi Sea. The goals and objects of the project have not changed.

PROJECT CONTACT

Contact Name: Larry Dietrick, Director, Division of Spill Prevention & Response
Address: Alaska Department of Environmental Conservation, 410 Willoughby Avenue, Ste 303, Juneau, AK 99801
Telephone Number: (907) 465-5250
Fax Number: (907) 465-5262
E-mail Address: larry.dietrick@alaska.gov

PROJECT LOCATION

Northeastern Chukchi Sea.

PROJECT DURATION

1 year

ESTIMATED COST

Spending Estimate ($)	
TOTAL	Year 1
67,000	67,000

Funding per Allocation Year of CIAP ($)				
TOTAL	FY 07	FY 08	FY 09	FY 10
67,000	0	67,000	0	0

PROJECT DESCRIPTION

Current measurements on the inner shelf (inshore of the 125 foot isobath) of the northeast Chukchi Sea are required to assess oil spill risks, develop oil spill response protocols, and aid in the design of offshore structures. The few year-round current measurements from this region of the Chukchi Sea were all made in water depths greater than 125 feet and nearly all the measurements were obtained near the ocean bottom (within 40 feet of the seabed). The measurements to be made in this project will be the first made in this region in water depths less

than 125 feet and thus in depths where buried oil or gas pipelines may eventually be constructed. The prior current measurements from deeper waters may not be representative of currents inshore of the 125 foot isobath hence response protocols developed for deeper shelf waters may not be applicable in shallower depths. These differences are likely associated with variations associated with water column stratification, wave effects, the increased influence of wind-forcing in shallow water, and a more complicated sea-ice regime due to polynya formation and perhaps extensive interactions amongst ice floes impinging upon the coast. There will also be seasonal differences in the current structure due to the seasonal variations in winds, the formation and ablation of sea ice, and river runoff. This project will provide the first measurements of ocean and ice circulation in shallow portions of the Alaskan Chukchi Sea. The year-round measurements will be made from an oceanographic mooring deployed in approximately 100 feet of water offshore of Wainwright Alaska. The mooring will measure ocean currents throughout the water column, ice thickness and velocity, and temperature, salinity, and pressure (sea-level) from August-September 2009 to August - September 2010. This mooring will complement shore-based surface mapping radars and vessel-supported oceanographic measurements being funded (by the Minerals Management Service) during the same time period.

MEASURABLE GOALS AND OBJECTIVES

- Deploy bottom-mounted oceanographic mooring equipment for the period from August to September.
- Synthesize and report measured ocean current, ice thickness and velocity, temperature, salinity and pressure data.

CIAP AUTHORIZED USE

This project is consistent with CIAP authorized use #1:

> *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.*

This project will yield information on sea currents that can be used to assess oil spill risks, develop oil spill response protocols, and design offshore structures. These data will be particularly relevant to the Alaskan Chukchi Sea, where the oil industry has recently and dramatically shown interests in offshore leasing and exploration. This information will be used by resource managers and others to help protect or restore coastal marine environments and mitigate damage to the marine ecosystem. For example, the current meter data will be used to estimate water parcel trajectory probabilities for different seasons and durations. Such an analysis was specifically requested by the Alaska Department of Environment Conservation (ADEC) for their oil spill contingency planning purposes with the results presented in a report to ADEC (Danielson, S. L. and T. J. Weingartner, 2007, *Estimates of Oil Spill Dispersion Extent in the Nearshore Alaskan Beaufort Sea Based On In-Situ Oceanographic Measurements*, 154 pp., which can be downloaded from http://www.ims.uaf.edu/beaufort/index3.html). This report has also been made available to MMS, John Whitney, Alaska Scientific Support Coordinator, NOAA-Hazmat, the North Slope Borough (Craig George, Dept. of Wildlife Management), and the Minerals Management Service. Similar analyses will be made for the Chukchi Sea in water depths of about 120 feet.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The U.S. Minerals Management Service, with ConocoPhillips, and Shell as partners, intend to support shore-based surface current mapping radar measurements and hydrographic data collection in this region. The moored data from this CIAP project will be analyzed as part of that project and blended with these other data sets. The CIAP mooring will provide a calibration point for the radar measurements. The CIAP data will also be blended into the final report to MMS, with this report provided to ADEC.

COST SHARING OR MATCHING OF FUNDS

This project does not envision using CIAP funds for cost sharing or matching purposes required by another grant.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROPOSAL

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER

PROJECT TITLE: Matanuska-Susitna Trail Rehabilitation and Wetland Restoration

Note: This project was approved as part of the 2008 Alaska CIAP Plan. The only amendment is a change to the project contact and funding year.

PROJECT CONTACT

Contact Name: David Griffin
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Phone: (907) 269-8546
Fax: (907) 269-8913
E-mail: david.griffin@alaska.gov

PROJECT LOCATION

Wetlands will be restored in the Matanuska and Susitna Valleys. The specific areas will be identified in Year 1 of the project. The areas restored will be either within the coastal area, or within the watershed draining immediately into the coastal area. (See attached map)

PROJECT DURATION

4 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
140,000	50,000	30,000	30,000	30,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
140,000	0	50,000	90,000	0

PROJECT DESCRIPTION

The Matanuska and Susitna Rivers are the two major rivers that drain Southcentral Alaska and the major rivers that empty into Cook Inlet. There are a number of regionally significant trails in this area that serve as transportation corridors for multiple uses. The rapidly expanding OHV (off highway vehicles) use and the large area of wetlands that makes crossing them inevitable has contributed to miles of degraded trails which are rapidly increasing as the intensity of use increases. Most of these trails are unmaintained and once the original alignment becomes degraded, trail users are forced to widen the trail and to go around the degraded section. This

process has been repeated over and over again eventually resulting in trail braiding and to severely damaged wetland areas (see attached photographs). Some trails may be rerouted so that they take advantage of drier and more stable soils on forested ridges. In other areas, the most sustainable alignment will be identified and modern trail hardening techniques will be implemented to improve the trail so that a single route can be used to cross the wetland area allowing the degraded wetland areas to revegetate and rehabilitate.

This project will identify wetland areas that have been highly impacted by trails in the Matanuska-Susitna Valleys; then restore, rehabilitate or reroute trails on state lands with the objective of protecting or restoring damaged wetlands and natural resources that negatively affect the watersheds feeding the coastal areas (see attached maps for examples of trails within the coastal zone). Many of the multiuse trails in these valleys have substantial erosion issues because of unplanned development and trail construction techniques. The resulting soil erosion from these degraded trails eventually ends up in the Susitna River, which eventually drains into Cook Inlet. Trail improvements or rerouting trails around these wetlands decrease the amount degraded wetlands and the amount of siltation entering the river system and eventually the coastal area. Appropriate mitigation and rehabilitation of wetland areas will substantially reduce the amount of siltation entering the wetlands and anadromous streams. The acceptable mitigation will need to be designed to require limited maintenance.

These trails receive increasing public recreational use, inclusive of hunting and fishing access. The valleys have a mix of land ownership with many trails that are not legally established. This project will only focus on trails that are on state lands where there is legal public access to the land. The intent is to make one time improvements to portions of the trails, creating more sustainable trails that can support increased use without increased impacts to the wetlands, natural resources and streams.

The planned result will be an improved trail segment that will lessen the amount of erosion runoff, which eventually ends up in the estuarine waters of the coastal area.

MEASURABLE GOALS AND OBJECTIVES

Year 1: Develop a report supported with GPS/GIS map products assessing trail condition with an inventory of specific trails to quantify and qualify the magnitude of damage, prioritize the rehabilitation needs, and develop recommended prescriptions with cost for materials and labor to mitigate damages. GPS photo linked images of degraded trail segment before and after trail rehabilitation will be included.

Year 2: Restore, rehabilitate or reroute at least 1,000 linear feet of trails.

Year 3: Restore, rehabilitate or reroute at least 1,000 linear feet of trails.

Year 4: Restore, rehabilitate or reroute at least 1,000 linear feet of trails.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP Authorized Use number 1 - *projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* Hardening, or rerouting trails will restore wetlands by defining a single travel route or avoiding the wetland all together and thereby allowing the degraded wetland area an opportunity to rehabilitate. This will also improve water quality in adjacent anadromous streams.

COORDINATION WITH OTHER FEDERAL RESOURCES OR PROGRAMS

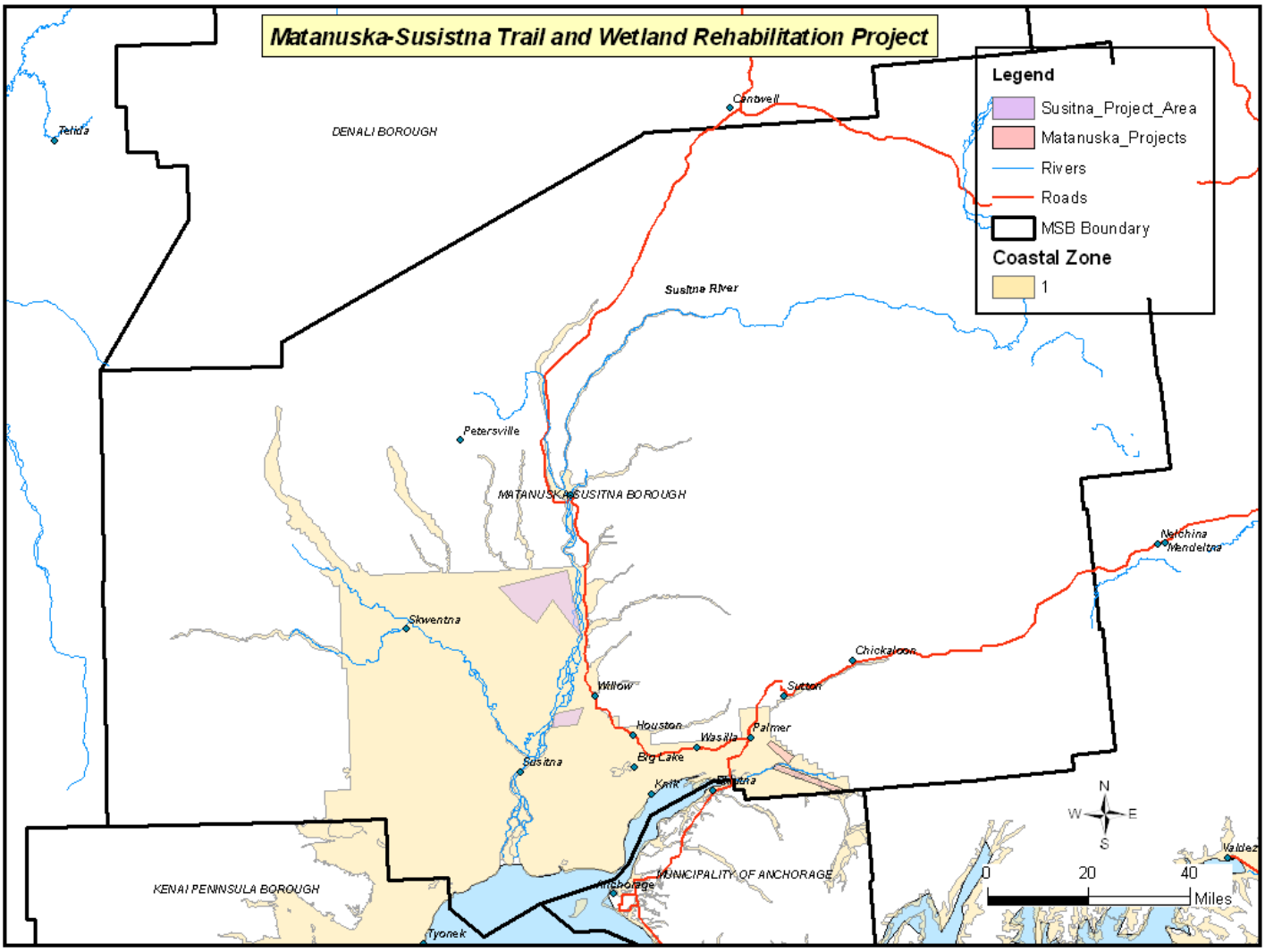
There are no Federal programs that are currently providing funding support or contributing resources to this project.

OTHER FUNDING SOURCES

The division receives some support from the Mat-Su Borough that funds a position to work on certain trail projects, primarily to establish legal easements. We may be able to coordinate some of that person's time to assist in this project if the Borough concurs. The project would be coordinated to not duplicate any efforts of other trail project funding. The other identified sources would be the Recreational Trail Grants or the Alaska Trails Initiative administered through the Division of Parks and Outdoor Recreation and the Wildlife Habitat Improvement Project funded through the Natural Resource Conservation Service.

COST SHARING OR MATCHING OF FUNDS

CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.



Damaged wetlands caused by braided trail

Siltation into anadromous fish stream caused by unmaintained trail

Wetland bog degraded by OHV use

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF COMMERCE, COMMUNITY, AND ECONOMIC DEVELOPMENT

PROJECT TITLE: Mertarvik Community/Waterfront Strategic Management Plan

Note: This project was approved as part of the 2008 Alaska CIAP Plan. The title of the project has been amended. The words "Community" and "Strategic" have been added to the title to more accurately reflect the scope of work presented in the project narrative of the approved plan. "All Hazards" has been removed from the title so as to avoid confusion with the all hazards mitigation plan developed for Newtok and the new village site at Mertarvik by the Alaska Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management. These changes will not change the scope of work in any way.

PROJECT CONTACT

Contact Name: Sally Russell Cox, Planner III
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PROJECT LOCATION

Mertarvik, the Village of Newtok's relocation site, is on Nelson Island within the Yukon Delta National Wildlife Refuge. See attached map

PROJECT DURATION

2 years

ESTIMATED COST

Spending Estimate ($)		
TOTAL	**Year 1**	**Year 2**
150,000	75,000	75,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
150,000	0	75,000	75,000	0

PROJECT DESCRIPTION

This project involves the development of a Community/Waterfront Strategic Management Plan for the Village of Newtok's relocation site, Mertarvik, on Nelson Island. Community/waterfront strategic management plan, and baseline data to support the plan, is critically needed to provide a strategy for efficient relocation and community development activities and to reduce the impacts of these activities to the surrounding Yukon Delta National Wildlife Refuge. The potential benefits of this project reach beyond the Nelson Island area because the Newtok relocation effort is being viewed as a model for future relocation of Alaskan villages affected by flooding and coastal erosion.

In 2003, Newtok Native Corporation received 10,943 acres of land on Nelson Island in a land exchange with the U.S. Fish and Wildlife Service (United States Public Law 108-129). The purpose of the land exchange was to provide land for the Village of Newtok to relocate to as a result of progressive and unmitigatable erosion that threatens the existence of the current village, nine miles to the north of the Mertarvik site.

Newtok and the new village site, Mertarvik, are located within the coastal zone of the Yukon Delta National Wildlife Refuge. The Yukon Delta National Wildlife Refuge encompasses more than 26 million acres of land and water and is dominated by the Yukon-Kuskokwim Delta, one of the largest river deltas in the world. An abundance of water and wetland types combine to make the Refuge some of the finest waterfowl habitat in North America.

Newtok is a traditional Yup'ik Eskimo village whose residents rely directly on the Refuge's fish and wildlife resources for the majority of their food supply. In addition to subsistence uses, commercial fishing is important to the village economy. Currently, twenty-seven residents hold commercial fishing permits.

Some planning efforts have occurred and are ongoing for relocating Newtok to Mertarvik. The Newtok Traditional Council and Newtok Native Corporation are actively working with a multi-government agency group, the Newtok Planning Group, for the planning and design of infrastructure, housing and waterfront facilities at Mertarvik. A barge ramp and staging area, under contract management by the Alaska Department of Commerce, Community and Economic Development and funded through the Economic Development Administration and the Alaska Department of Transportation and Public Facilities, will be built in 2008. Construction of a fisheries support center by Coastal Villages Region Fund will follow completion of the barge facility.

Additional waterfront development is likely for the future community. It is anticipated that once the Newtok community is established at Mertarvik, there will be an increased demand for larger boats that must be stored in the water, requiring small boat harbor development. In addition, construction of a breakwater or similar protective structure may be necessitated because the Mertarvik shoreline is not naturally protected. There are portions of the shoreline near the future barge landing site that are exposed to 20 to 30 miles of open water across Baird Inlet with the potential for fairly large waves. There are also areas of the shoreline that may be exposed to high currents, particularly during storm surge events.

The new village site is within two miles of Baird Inlet Island -- a low, wet, grassy island that supports a large colony of nesting Pacific brant. Baird Inlet Island is a critical production area for these geese. There are concerns that relocation and development activities such as increased air traffic and boating activity, could impact critical wildlife habitat on the island and surrounding areas.

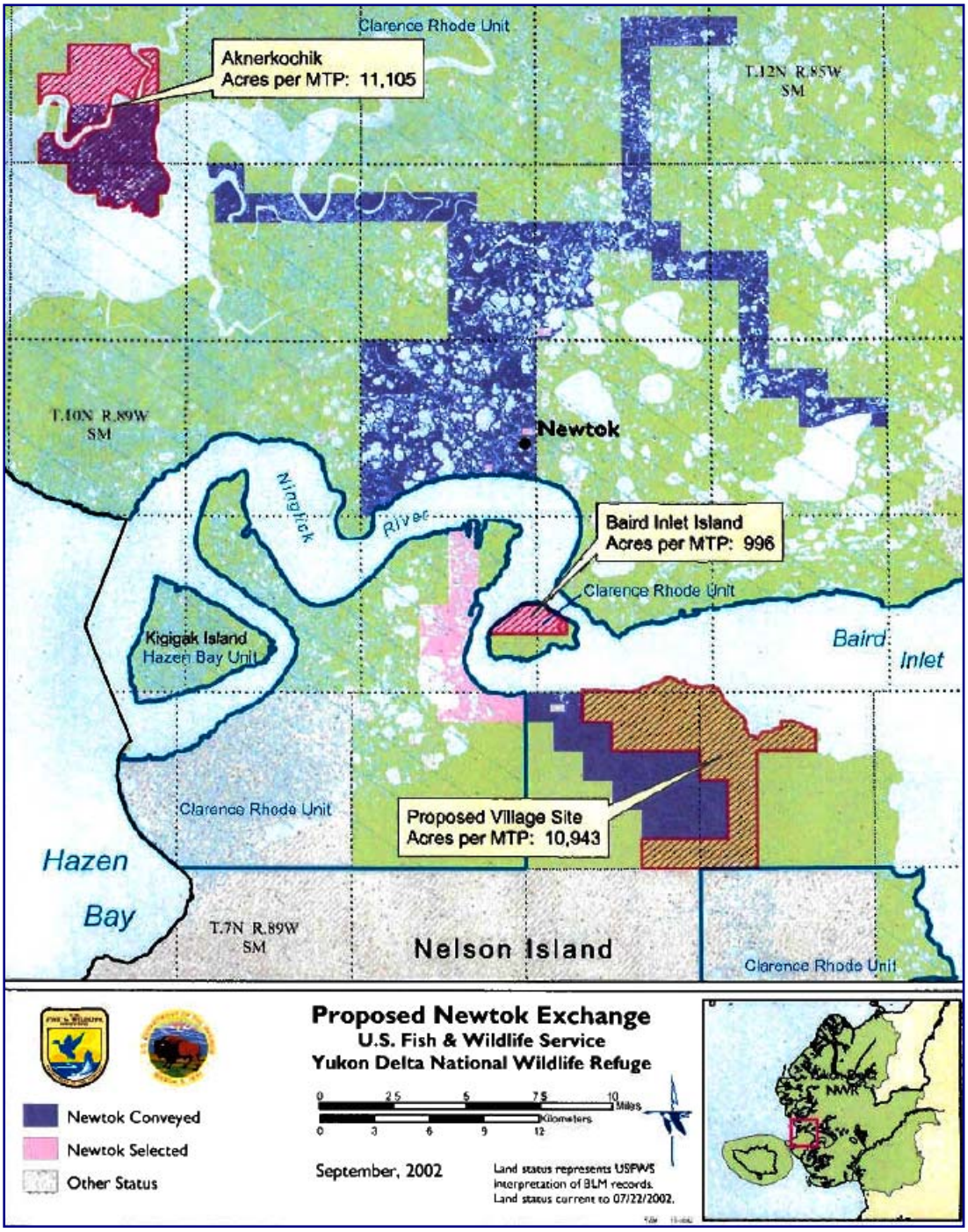

Figure 1: Location of Newtok, the village relocation site of Mertarvik (transferred to Newtok Native Corporation in 2003), and Baird Inlet Island. USFWS figure.

It is critical that a waterfront management plan be developed for the new community in order to address stakeholder needs and to reduce impacts to the surrounding Yukon Delta National Wildlife Refuge. Without such a plan, the transportation of materials and equipment to Mertarvik is likely to impact a larger area of the intertidal and uplands nearshore areas. With a waterfront management plan, information on critical fish and wildlife construction time windows would be provided. More information should result in more efficient and environmentally acceptable plans and actions.

MEASURABLE GOALS AND OBJECTIVES

This project will result in a strategic management planning document that will provide criteria and guidelines for relocation and community/waterfront development at Mertarvik. This document is intended to strategically plan and organize sustainable activities to guide the relocation with no or minimal impacts on the surrounding Yukon Delta National Wildlife Refuge. A two-year strategic planning approach will be taken in the development of this document, summarized as follows:

Year 1:

- Collection of baseline data of the Mertarvik and surrounding Yukon Delta National Wildlife Refuge environment, including an inventory of the physical environment (such as critical fish and wildlife habitat and natural hazard areas), geography, history, community characteristics, and the identification of the major stakeholders involved with village relocation and community development activities (including government agencies and regional organizations). This information will be summarized in the planning document, with more detailed data summaries provided in the planning document appendices. An important purpose of this information will be to develop critical fish and wildlife construction time windows that will be incorporated into the overall relocation schedule.

Year 2:

- Identification of major stakeholder issues and the development of goals and objectives of the relocation and community/waterfront development process. Stakeholder participation in this process is critical and will be carried out through a series of meetings. A summary of this process, including the participants and findings, will be provided in the planning document.

- Development of a work breakdown structure and implementation plan that describes the actions required for carrying out the relocation and waterfront development strategy, including:

    - The tasks or activities that will happen.
    - The entities responsible for specific tasks or activities. The roles of the stakeholders (including the community and government agencies) in relocation and development activities will be defined and clarified.
    - The resources required.
    - The schedule for activities. Development of a strategic management schedule for relocation and community/ waterfront development activities will be an important

product. In addition to being described in the planning document narrative, the schedule will be presented as a Gantt chart.

Additional stakeholder meetings will be held as part of this process.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USES
This project complies with CIAP Authorized Use number 2*. Mitigation of damage to fish, wildlife, or natural resources.*

This project will help reduce impacts to the coastal area of northern Nelson Island and the surrounding Yukon Delta National Wildlife Refuge. The development of a waterfront management plan will provide vital information on critical fish and wildlife construction time windows that will mitigate impacts to fish, wildlife and other natural resources in the area during relocation activities. A strategic management schedule can reduce impacts to intertidal and uplands nearshore areas during the transportation of materials and equipment to Mertarvik as part of the relocation process. The development of a waterfront management plan will also provide an important venue through which the many stakeholders in village relocation activities can become involved in the decision-making that affects the resources of the Yukon Delta National Wildlife Refuge. This project has the potential to have an even wider reaching impact because the collaboration of State and Federal agencies on the Newtok relocation is being viewed as a model for how agencies can work together on other village relocation efforts throughout the State.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS
Through the coordination of the Newtok Planning Group, several state and federal agencies and regional organizations are collaborating on a number of projects, including those listed below, for the relocation of Newtok to Mertarvik:
(See http://www.commerce.state.ak.us/dcra/planning/pub/Newtok_History4.pdf).

Grant for Mertarvik Barge Landing and Staging Area
- The Alaska Department of Commerce, Community and Economic Development (DCCED) applied, on behalf of the Newtok Traditional Council (NTC), for an Investment Assistance Grant through the U.S. Department of Commerce Economic Development Administration (EDA). The grant application was for the design and construction of a barge landing and staging area at Mertarvik.
- The U.S. Army Corps of Engineers (USACE) and the Alaska Department of Transportation and Public Facilities (DOT/PF) assisted with the environmental narrative and conceptual drawings for the grant application.
- DOT/PF offered to provide the $200,000 state match for the project. The EDA $800,000 grant was subsequently awarded to DCCED and the NTC.

Project Management of Design/Construction of Mertarvik Barge Landing and Staging Area
- In order to utilize DOT/PF's construction authority and design expertise, DCCED and DOT/PF have entered into a project agreement for the management of the Mertarvik Barge

Landing and Staging Area. DCCED and DOT/PF are working cooperatively to fulfill the grant administration and project management tasks to successfully carry out this project.

Community Layout Plan for the New Village at Mertarvik

- DCCED provided technical assistance to NTC in the preparation of an application for a Mini-Grant to fund development of community layout. The Mini-Grant Program is administered by DCCED/DCRA through funding provided by the Denali Commission.
- The Alaska Department of Environmental Conservation Village Safe Water Program (DEC/VSW) "jumped-started" the community layout process by funding a contractor to develop a layout for water and wastewater infrastructure at Mertarvik. A site was selected for a test well. The community site was selected to take advantage of gravity flow, which will eliminate the need for lift stations.
- After the NTC was awarded the $30,000 Mini-Grant, staff from DCCED/DCRA, DEC/VSW and the USACE served on the Newtok Traditional Council's proposal evaluation team to select a consultant to prepare the community layout.
- DCCED/DCRA staff worked with the consultant to carry out community planning workshops in Newtok.

Geotechnical Studies and Water Drilling at Mertarvik

- In the summer of 2007, USACE and VSW collaborated on the contracting of a drilling company to carry out geotechnical and test well drilling at Mertarvik. Bore samples were taken of the proposed sites for the barge landing staging area, barge landing road and evacuation center.
- The drill rig was left at Mertarvik and in spring 2008, DOT/PF contracted with the same drilling company to take tideland samples new the proposed barge landing.
- DOT/PF will also be using the same drilling contractor for geotechnical investigations of the proposed runway sites at Mertarvik in summer, 2008.

Design and Construction of Evacuation Road and Center at Mertarvik

- The USACE used Section 117 funding to initiate design and construction of the evacuation road and center at Mertarvik. The Environmental Assessment and Finding of No Significant Impact has been released for public review.
- DCCED, NTC and other Newtok Planning Group members are participating in a USACE value engineering session on the evacuation center.
- The Alaska Governor's Climate Change Subcabinet Immediate Action Workgroup (IAW) recommended that funding be provided for the evacuation road and center. State Fiscal Year 2009 Capital Budget funding provided $3.3 million for this project. (DCCED and the USACE were co-chairs of the IAW).
- DCCED, in collaboration with the Denali Commission, has applied to the Department of Defense's Innovative Readiness Training Program (IRT) to build the road and evacuation center.

COST SHARING OR MATCHING OF FUNDS

CIAP funds for this project will not be used for cost sharing or matching purposes for any other project.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF COMMERCE, COMMUNITY AND ECONOMIC DEVELOPMENT

PROJECT TITLE: Newtok Environmental Site Inventory and Assessment

PROJECT CONTACT:

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Telephone Number: 907-269-4588
Fax Number: 907-269-4563
E-mail Address: sally.cox@alaska.gov

PROJECT LOCATION:

The Village of Newtok is located on the west bank of the Newtok River, just north of the Ninglick River and approximately 9 miles northwest of Nelson Island, in Western Alaska. The village is located within the Yukon Delta National Wildlife Refuge.

PROJECT DURATION

2 years

ESTIMATED COST:

Spending Estimate ($)		
TOTAL	**Year 1**	**Year 2**
100,000	50,000	50,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
100,000	0	50,000	50,000	0

PROJECT DESCRIPTION:

This project involves the inventory of hazardous substances and sources of potential or known contamination in the Village of Newtok. Due to the progressive and unmitigatable erosion[2] of the Ninglick River, the village is in the process of relocating to a new site on

[2] The village is being critically threatened by the high rate of erosion of the Ninglick River bank adjacent to the village. This erosion has been occurring for years and is recognized as a critical threat to the community. Between 1954 and 2003, the Ninglick River eroded away approximately 3,320 linear feet of land in front of the village. The average annual erosion rate for this period was 68 feet per year. However, in 2003, 110

Nelson Island, nine miles to the south of the current village site[3]. An inventory, assessment and cleanup strategy of the current village site is necessary. The purpose of the inventory would be to document the impacts to the surrounding environment if the village structures and facilities are washed away as a result of erosion.

The Village of Newtok is a coastal community on the west bank of the Newtok River, just north of the Ninglick River and approximately 9 miles northwest of Nelson Island, in Western Alaska. The Ninglick River connects the Bering Sea with the Baird Inlet, upstream from Newtok. The village is located within the Yukon Delta National Wildlife Refuge (See **Figure 1**).

The Yukon Delta National Wildlife Refuge encompasses more than 26 million acres of land and water and is dominated by the Yukon-Kuskokwim Delta, one of the largest river deltas in the world. An abundance of water and wetland types combine to make the Refuge some of the finest waterfowl habitat in North America. The manner in which the Newtok village site is dealt with after it has been vacated could significantly impact the surrounding Refuge environment.

This project will identify existing and potential recognized environmental conditions associated with residences and public facilities (including village fuel tank farm, power plant) within the Newtok village site. Investigations will be conducted in general accordance with "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" established by the American Society for Testing and Materials (ASTM Designation E1527-00). The project will identify alternatives and preliminary costs for remediation, and examine potential impacts if village structures were released to the environment if they were not cleaned up prior to the erosion activities washing them into the Bering Sea.

The potential benefits of this project reach beyond the Village of Newtok because the Newtok relocation effort is being viewed as a model for future relocation of Alaskan villages affected by flooding and erosion.

MEASURABLE GOALS AND OBJECTIVES

The inventory, assessment and clean-up strategy will be documented in a project report, which will be the final deliverable of this project. The report components will be completed over 2 years and are summarized as follows:

Year 1:

- An inventory of hazardous substances and sources of potential or known contamination in the Village of Newtok. Existing and potential recognized environmental conditions associated with residences and public facilities (including village fuel tank farm, power plant, and landfill) will be identified. The

linear feet of land between the river and the village was washed away. Studies conducted over the past two decades have concluded that there is no permanent and cost effective alternative available for remaining at the current site and that the village must relocate.

[3] In 2003, Newtok Native Corporation received 10,943 acres of land on Nelson Island in a land exchange with the U.S. Fish and Wildlife Service (United States Public Law 108-129).

purpose of the inventory will be to document the impacts to the surrounding environment if the village structures and facilities are washed away as a result of erosion. The inventory will be published in the final project report with the assessment of identified conditions and clean up strategy.

Interim Deliverable: The results of the hazardous substances and contaminants inventory will be made publicly available at the end of year 1.

Year 2:

- An assessment of identified conditions. Investigations will be conducted in general accordance with "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" established by the American Society for Testing and Materials (ASTM Designation E1527-00). The project will identify alternatives and preliminary costs for remediation, and examine potential impacts if village structures were released to the environment if they were not cleaned up prior to the erosion activities washing them into the Bering Sea.

- The development of a cleanup strategy of the village site based on the inventory and assessment. The clean-up strategy will be implemented after the community has relocated to the new village site.

Final Deliverable: The final deliverable of this project will be a published report on the Newtok Environmental Site Inventory, Assessment and Clean-up Strategy.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USES:
This project complies with the following authorized use for CIAP funding:

2. Mitigation of damage to fish, wildlife, or natural resources.

The project will identify alternatives and preliminary costs for remediation, and examine potential impacts if village structures were released to the environment if they were not cleaned up prior to the erosion activities washing them into the Bering Sea. This information can be used to mitigate adverse impacts to the fish, wildlife, and natural resources of the current village of Newtok and the surrounding Yukon Delta National Wildlife Refuge through the development and implementation of a cleanup strategy of the village site. The clean-up strategy will be implemented after the community has relocated to the new village site.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS: Several State and Federal Agencies are or have been engaged in projects and/or studies of the area, including the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and the Alaska Departments of Transportation and Public Facilities, Environmental Conservation (Village Safe Water Program), and Commerce, Community,

and Economic Development. See
http://www.commerce.state.ak.us/dcra/planning/pub/Newtok_History4.pdf

COST SHARING OR MATCHING OF FUNDS:
CIAP funds for this project will not be used for cost sharing or matching purposes for any other project.

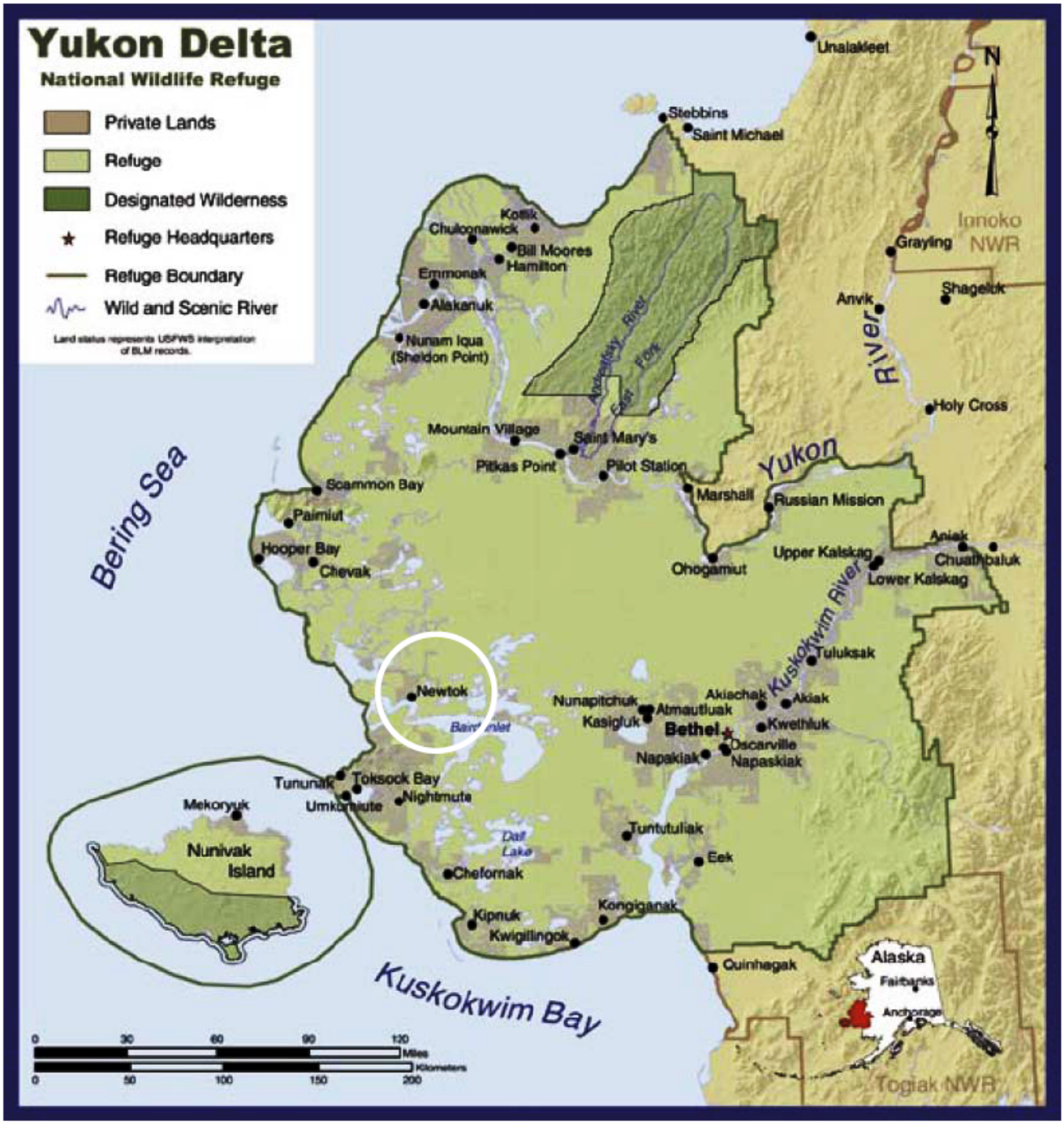

Figure 1. The Yukon Delta National Wildlife Refuge showing the central location of Newtok (US Fish and Wildlife Service figure).

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES (DNR)
DIVISION OF COASTAL AND OCEAN MANAGEMENT (DCOM)

PROJECT TITLE: Administration of the Alaska Coastal Impact Assistance Program (CIAP)

Note: This project was approved as part of the 2008 Alaska CIAP Plan. It was amended in the March 2010 plan to increase the budget due to the additional administrative expenses associated with the increase in annual CIAP allocation to the State of Alaska for fiscal years 2009 and 2010. However, in order to not exceed the 23% limitation on projects that address Authorized Use #3, the March 2010 Amendment did not include all of the administrative costs associated with CIAP. This December 2010 Amendment includes all administrative costs.

PROJECT CONTACT

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ADMINISTRATIVE CONTACT

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PROJECT LOCATION

Juneau, Alaska

PROJECT DURATION

2007- 2016. This project description covers administrative costs for the life of CIAP. Minerals Management Service (MMS) awarded an initial grant for this project in July 2009. MMS approved amendments in March 2010 and in June 2010. As grant funds must be expended within 4 years of issuance, the awarded grant and associated amendments only cover administrative costs through May 2013. DCOM will apply to the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE) for a new grant in 2013 to cover any outstanding administrative needs as described in this project description.

ESTIMATED COST

The total cost of this project is $4,322,810.06.

Spending Estimate ($)										
TOTAL	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2113**	**2014**	**2015**	**2016**
4,322,810.06	79,148	81,102	304,133	324,533	441,354	595,312	605,039	588,055	640,453	663,681.06

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
4,322,810.06	1,250	122,914	2,944,404.40	1,254,241.66

PROJECT DESCRIPTION

The purpose of this project is to provide for planning and administration of the Alaska Coastal Impact Assistance Program. The Division of Coastal and Ocean Management within the Department of Natural Resources has the authority to manage, implement, and monitor the Alaska CIAP. DCOM will serve as the lead agency for CIAP and will be the liaison between the state and BOEMRE for purposes of CIAP. DNR will develop and amend the state's CIAP plan as needed, apply to BOEMRE for each grant, and track each CIAP project.

Legislation effecting CIAP

On May 21, 2009, Governor Palin signed legislation (CSSB 75(FIN)) into law effecting the distribution of the direct to state portion of CIAP funds. This project description regarding the administration of CIAP will administer the program consistent with BOEMRE guidelines and consistent with the legislation. The Alaska legislature appropriated the direct to state portion of CIAP funds (all four years combined) as follows[1]:

1. $23,067,581.13 to DNR for state initiated projects
2. $1,373,070.31 to Department of Fish & Game (DFG) for the Western Alaska Salmon Coalition's (WASC) Chum and Sockeye Genetic Identification Program
3. $13,710,856.08 to Department of Commerce, Community and Economic Development (DCCED) for an open solicitation from the public
4. $9,340,520.70 to DCCED for use by eight named municipalities and four named coastal resource service areas (CRSAs) (amounts range from $86,110 to $2,570,786) per named recipient)

Tasks

This administrative project will cover costs associated with the following three tasks, each of which are programmatic in nature.

1. Plan development and amendment:

CIAP Plan development is a major component of administering CIAP.

[1] These numbers do not include the administrative costs associated with CIAP. CIAP administrative costs were taken proportionately from each of these four categories.

DCOM worked closely with the CPSs in the development and refinement of their projects and was the lead in the solicitation, selection, and refinement of projects from the state agencies. DCCED was the lead in the solicitation and selection of projects from the public and named recipients.

In addition to funding DCOM's and DCCED's plan development efforts, this administrative project also funds CIAP project development efforts conducted by the CRSAs. It is important to note that the CRSAs are comprised of rural areas within the State of Alaska that function without the benefit of borough governments. The CRSAs range in size from approximately 9,400 square miles to over 35,000 square miles and include between four and 40 different rural communities, many of which are geographically isolated from one another. Their size, number of communities and isolation contribute to the high cost of doing business in these areas. Each of the four CRSAs are run by a board made up of seven to nine individuals from the area. This administrative project includes funds that will be made available to each of the four CRSAs for project development (up to $50,000 per CRSA). While included in the administrative grant, the funds will be reduced from the overall amount available for projects, as allocated to each CRSA by legislation.

DCOM intends to review the Alaska CIAP plan annually to evaluate whether or not it still reflects the state's and CPSs' priorities. Should priorities shift DCOM will revise the state plan. The revised plan will go out for public review and will be submitted to BOEMRE for approval. DCOM will also prepare any administrative amendments to incorporate project changes that have occurred through the grant process.

2. Grant applications

The State of Alaska will directly receive $1,576,250 annually for FY 2007 and 2008, $24,356,719.71 for FY 2009, and $24,105,619.51 for FY 2010 in CIAP funds.

DCOM will manage all the CIAP grants for this direct to state portion of the funding. This includes submitting the applications to BOEMRE, accepting the awards, and reporting on the grants. Once a grant is awarded, DCOM will use Reimbursable Service Agreements (RSA) to sub grant the award to the state agency responsible for the project. For the projects that will be conducted by the legislatively named recipients and those selected from the public solicitation, DCOM will use an RSA to transfer the funds to DCCED. DCCED will further sub award the funds to the entity conducting the project.

DCOM and DCCED will provide assistance, as appropriate and as needed to the entities conducting the projects (state agency, public, named recipient, WASC) and the coastal political subdivisions to review grant proposals.

3. Grant tracking

DCOM and DCCED will regularly communicate with project contacts and monitor project progress. DCOM will provide a progress report template that will focus on achievement of milestones, progress on measurable objectives, unexpected challenges, and expenditures. At a project's conclusion DCOM will verify and document the successful completion of the

measurable outcomes. If outcomes are not met, DCOM and DCCED, if appropriate, will work with the project contact to determine what steps and budget is necessary to complete the project. If a project changes course or falls short of projected outcomes DCOM will work as a liaison between the project agency and BOEMRE in order to keep BOEMRE apprised of project revisions or to amend the grant as needed.

MEASURABLE GOALS AND OBJECTIVES

The following products are the measurable outcomes that will demonstrate the successful management, implementation, and monitoring of the Alaska CIAP:

- A final approved State of Alaska CIAP plan that accounts for all of the CIAP funds allocated to the State of Alaska and the eight Alaska CPSs
- An RSA for each of the CIAP projects that will transfer funds from DCOM to the state agency conducting the project or to DCCED or DFG for further sub award to the entity conducting the project
- Sub grants from DCCED to the entity conducting the project for each of the projects selected through the public solicitation and projects proposed by the legislatively named recipients.
- Project Progress Report template
- All required state grant reports, to be submitted to BOEMRE
- Documentation of project completion for each CIAP grant issued to the State of Alaska
- Amendments to Alaska CIAP plan as needed to be submitted to BOEMRE

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP Authorized Use Number 3: *Planning assistance and the administrative costs of complying with CIAP*.

This project will cover administrative costs of the tasks noted above. These tasks are essential for the state to successfully comply with CIAP requirements.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The primary function of DCOM is to implement and administer the Alaska Coastal Management Program (ACMP), a federally approved program consistent with the Federal Coastal Zone Management Act. DCOM coordinates multi-agency state and federal project reviews for consistency with the ACMP. It also administers the distribution of Federal Section 306, 309 and 310N funding to coastal communities and state agencies for their implementation of the ACMP as well as special projects related to coastal management. As the recipient of both the ACMP grant funding and the CIAP funding, DCOM can ensure project coordination and can assist the grantees in developing projects that build on each other.

COST SHARING OR MATCHING OF FUNDS

CIAP funds will not be used to meet cost sharing or matching requirements of other federal grants.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER (DMLW)

PROJECT TITLE: Coastal Processes Seminars

PROJECT CONTACT:

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PROJECT LOCATION:
The DMLW will provide the seminars in Juneau, Fairbanks, Anchorage, Kotzebue, and one additional location yet to be determined.

PROJECT DURATION
2 years

ESTIMATED COST:

Spending Estimate ($)		
TOTAL	**Year 1**	**Year 2**
40, 486	30,136	10,350

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
40, 486	0	30,136	10,350	0

PROJECT DESCRIPTION:
This project will provide training to agency and coastal district staff involved in project review and permitting of proposed development and use along the coast. Dr. Orson Smith, P.E. Ph.D., Professor of Arctic Engineering at the University of Alaska- Anchorage http://www.engr.uaa.alaska.edu/faculty/smith/index.cfm has agreed to conduct a series of seminars pro bono. The seminars will be held in Juneau, Anchorage, Fairbanks, and Kotzebue during the first year. During year two, a seminar will be held in conjunction with the biennial Alaska Coastal Management Program Coastal District Conference. The purpose of the seminars will be to introduce attendees to coastal processes, coastal hazards such as erosion and storm surges, extraction of material from coastal waters, and construction of revetments, groins, docks,

and other structures along the coast. A better understanding of issues involving coastal development will facilitate the responsible use and protection of coastal resources.

MEASURABLE GOALS AND OBJECTIVES:

Year 1: The DMLW will conduct coastal processes seminars in Juneau, Anchorage, Fairbanks and Kotzebue. The DMLW will document the seminar dates, attendance, agenda topics, and evaluations. Handouts, reference material, or other pertinent information will be posted to the ACMP web site.

Year 2: The DMLW will conduct a fifth coastal process seminar (location yet to be decided). The DMLW will document the seminar dates, attendance, agenda topics, and evaluations. Handouts, reference material, or other pertinent information will be posted to the ACMP web site.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:

This project is consistent with CIAP Authorized Use number 4 - *Implementation of a federally approved marine, coastal or comprehensive conservation management plan.* The Alaska Coastal Management Program (ACMP) is a federally approved plan. Agency and district staff implement the ACMP by applying state standards to projects constructed in the Alaska coastal zone. On an annual basis over 350 projects are reviewed for consistency. Knowledge of coastal processes is necessary to implement specific components of the ACMP standards, including the following:

> ***11 AAC 112.210. Natural hazard areas.***
> *(c) Development in a natural hazard area may not be found consistent unless the applicant has taken appropriate measures in the siting, design, construction, and operation of the proposed activity to protect public safety, services, and the environment from potential damage caused by known natural hazards.*
>
> ***11 AAC 112.230 Energy Facilities***
> *(a) The siting and approval of major energy facilities by districts and state agencies must be based, to the extent practicable, on the following standards:*
> *(1) site facilities so as to minimize adverse environmental and social effects while satisfying industrial requirements;*
> *(2) site facilities so as to be compatible with existing and subsequent adjacent uses and projected community needs;*
> *(8) select harbors and shipping routes with least exposure to reefs, shoals, drift ice, and other obstructions;*
> *(11) site facilities so as to minimize the probability, along shipping routes, of spills or other forms of contamination that would affect fishing grounds, spawning grounds, and other biologically productive or vulnerable habitats, including marine mammal rookeries and hauling out grounds and waterfowl nesting areas;*
> *(14) site facilities in areas of least biological productivity, diversity, and vulnerability and where effluents and spills can be controlled or contained;*
> *(15) site facilities where winds and air currents disperse airborne emissions that cannot be captured before escape into the atmosphere;*

11 AAC 112.240. Utility routes and facilities.
(b)(1) Utility routes and facilities along the coast must avoid, minimize, or mitigate alterations in surface and ground water drainage patterns;

11 AAC 112.260. Sand and gravel extraction.
Sand and gravel may be extracted from coastal waters, intertidal areas, barrier islands, and spits if there is no practicable alternative to coastal extraction that will meet the public need for the sand or gravel.

11 AAC 112.300. Habitats.
(b)(2)(A) estuaries must be managed to avoid, minimize, or mitigate significant adverse impacts to adequate water flow and natural water circulation patterns; and
(b)(3) wetlands must be managed to avoid, minimize, or mitigate significant adverse impacts to water flow and natural drainage patterns;
(b)(4)(A) tideflats must be managed to avoid, minimize, or mitigate significant adverse impacts to water flow and natural drainage patterns; and
(b)(5)(A) rocky islands and sea cliffs must be managed to avoid, minimize, or mitigate significant adverse impacts to habitat used by coastal species;
(b)(6) barrier islands and lagoons must be managed to avoid, minimize, or mitigate significant adverse impacts
(A) to flows of sediments and water;
(B) from the alteration or redirection of wave energy or marine currents that would lead to the filling in of lagoons or the erosion of barrier islands; and
(C) from activities that would decrease the use of barrier islands by coastal species, including polar bears and nesting birds;
(b)(7) exposed high-energy coasts must be managed to avoid, minimize, or mitigate significant adverse impacts
(A) to the mix and transport of sediments; and
(B) from redirection of transport processes and wave energy;

By educating coastal and land managers about coastal processes and the influences of human alterations, they can better evaluate proposed activities and development in coastal areas and use the information to implement the ACMP standards identified above.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:
DMLW will invite Federal agency staff that implement the ACMP through project reviews to participate in the seminars. While CIAP will be used to put the seminars on, Section 306 or Section 309 funds will pay for a portion of the attendees' time and cost of participating.

COST SHARING OR MATCHING OF FUNDS:
CIAP funds will not be used for cost sharing or matching purposes.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

PROJECT TITLE: Geohazard Evaluation and Geologic Mapping for Coastal Communities – Amendment

Note: This project was originally approved as part of the 2008 Alaska CIAP Plan with a budget of $1,123,500. A revised project was approved as part of the March 2010 Amendment in which the budget was increased to $2,725,500, the funding year changed, and the number of communities to be studied expanded. This December 2010 Amendment has a slightly reduced budget. Project description and deliverables have not changed.

PROJECT CONTACT

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PROJECT LOCATION

At least nine, and up to fifteen, high-risk coastal communities in Alaska, to be determined in consultation with the Alaska Division of Community and Regional Affairs, Alaska Coastal Management Program staff, the U.S. Army Corps of Engineers (COE), the Denali Commission, the Immediate Action Workgroup of the Alaska Governor's Subcabinet on Climate Change, and affected coastal districts. Preliminary findings indicate that Kivalina, Shishmaref, Newtok, Shaktoolik, and Unalakleet are likely to be high-priority target communities for the first studies. Other communities that are less well-studied will also be evaluated as potential targets.

PROJECT DURATION

4 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
2,581,095	187,614	801,386	814,633	777,462

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
2,581,095	0	209,200	2,371,895	0

PROJECT DESCRIPTION

This amended project will expand our program of coastal community geohazards evaluation and geologic mapping in support of community and district planning. The Division of Geological & Geophysical Surveys (DGGS) will collect the necessary field data to produce and publish surficial and engineering-geologic/hazards maps of Alaskan coastal communities, prioritized in consultation with the Alaska Division of Community and Regional Affairs, Alaska Coastal Management Program staff, the U.S. Army Corps of Engineers (COE), the Denali Commission, and affected coastal districts. The maps will identify local natural hazards that must be considered in the siting, design, construction, and operations of development projects to ensure protection of the coastal area. Maps may include proposed community relocation sites in response to the severe coastal erosion problems now facing various Alaskan communities. Mapping will be completed at local and/or regional scales as needed to address specific local problems and to understand and evaluate the larger geologic context of the area. The engineering-geologic/hazards maps will be published in GIS format with standard metadata and will delineate areas where natural hazards such as erosion, slope instability, active faults, flooding, and earthquake effects should be considered at a more detailed level to fully evaluate construction risk and to ensure that the coastal areas are not damaged by planned and proposed development. Project work will be coordinated with current U.S. Geological Survey coastal studies to ensure there is no duplication of effort.

Approximately 6,600 miles of Alaska's coastline and many low-lying areas along the state's rivers are subject to severe flooding and erosion. The United States General Accounting Office (GAO; now the U.S. Government Accountability Office) reported in 2004 that flooding and erosion affects 184 out of 213 (86 percent) of Alaska Native villages, and most of these are coastal communities. Many of the problems are long-standing, although some studies indicate that increased flooding and erosion is being caused in part by changing climate. The GAO found that four villages – Kivalina, Koyukuk, Newtok and Shishmaref – are in imminent danger from flooding and erosion, and planning is underway to relocate these villages further inland. Of the top four at-risk villages, all but Koyukuk are coastal communities.

These findings were reinforced in 2006, when the U.S. Army Corps of Engineers examined erosion issues in the communities of Bethel, Dillingham, Kaktovik, Kivalina, Newtok, Shishmaref, and Unalakleet as part of its Alaska Village Erosion Technical Assistance Program. The coastal villages of Kivalina, Newtok, and Shishmaref were determined to have only 10-15 years left in their current locations before being irretrievably lost to erosion if countermeasures were not implemented.

Even more recently, the Immediate Action Workgroup of the Alaska Governor's Subcabinet on Climate Change (2008) identified the communities of Kivalina, Koyukuk, Newtok, Shaktoolik,

Shishmaref, and Unalakleet as being in greatest peril due to climate change phenomena and therefore in most need of immediate actions to prevent loss of life and property. The Workgroup recognized the necessity of developing a "methodology for prioritization of needs based on the risk to lives, health, infrastructure, homes, businesses, subsistence harvests, significant cultural attributes, and the quality of life." Furthermore, "villages with declining populations, which already cannot support continuation of vital services such as a school, would likely be a lower priority than those which are likely to sustain viable communities during the foreseeable future." These first steps, taken in coordination with the affected communities, are a start at developing a prioritization of target communities for the geologic investigations of this project.

The final report of the Alaska Climate Impact Assessment Commission to the Alaska State Legislature on March 17, 2008, found that "specific communities are in need of more detailed geologic and hydrologic mapping, including geophysical hazard mapping, in order to define the adequacy of the local terrain for adapting to coastal and riverine erosion and permafrost thawing." The Commission specifically recognized the need to provide "adequate resources to the Division of Geologic and Geophysical Surveys (DGGS) in the Department of Natural Resources, to coordinate state-federal engineering surveys of potential evacuation routes, village relocation sites, and material sources, including gravel and armor rock. This coordinated effort will insure that sites will prove sustainable and can optimize local resources in a cost effective manner." The Commission singled out the same GAO-targeted communities of Kivalina, Newtok, Shishmaref, and Koyukuk as being particularly impacted, and found that as many as twenty other Alaskan villages may suffer from similar strategic short-comings.

The current proposal follows the Commission's recommendation that the criteria by which a community is identified as "at risk" and in need of relocation due to erosion or other potential damage as a result of climate change be developed in conjunction with the state administration, the Denali Commission, and the U.S. Army Corps of Engineers (COE). Our prioritization metrics will include assessment of the relative potential value and usefulness of conducting studies in a given area.

DGGS will use the requested funding for project operations, including field work, publication costs, and contract geologists and/or engineers, and to continue funding a Geologist IV project lead and a Geologist I to provide field and office assistance as well as technical, database, and GIS support for preparing maps, reports, and metadata for publication.

MEASURABLE GOALS AND OBJECTIVES

Year 1: Develop prioritized list of coastal communities needing detailed geologic mapping.

Publish engineering-geologic/hazards maps and reports for one coastal community.

Year 2: Publish engineering-geologic/hazards maps and reports for at least two coastal communities.

Year 3: Publish engineering-geologic/hazards maps and reports for at least three coastal communities.

Year 4: Publish engineering-geologic/hazards maps and reports for at least three coastal communities for a total of at least nine coastal communities.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP Authorized Use number 4, *Implementation of a federally-approved marine, coastal or comprehensive conservation management plan*, because the products will be directly applicable to development and amendment of coastal district coastal management plans. There are 35 coastal districts in Alaska (only 28 of the districts are currently active). District plans are a component of the Alaska Coastal Management Program (ACMP), a federally approved and funded program. Geologic and hazard maps produced by the proposed project will provide the scientific basis required for the designation of natural hazard areas by coastal districts and the Department of Natural Resources under state regulations, 11 AAC 112.210(a): *"Such designations must provide the scientific basis for designating the natural process or adverse condition as a natural hazard in the coastal area, along with supporting scientific evidence for the designation."* Designation of natural hazard areas are important to the implementation of the ACMP because state regulations *require* that a designation exist in order for the coastal districts or the state to implement related district enforceable policies or the state ACMP natural hazard standard, 11 AAC 112.210 (c): *"Development in a natural hazard area may not be found consistent unless the applicant has taken appropriate measures in the siting, design, construction, and operation of the proposed activity to protect public safety, services, and the environment from potential damage caused by known natural hazards."*

Because of Alaska's size and active geologic processes, many geologic hazards jeopardize the integrity of the state's infrastructure and the safety of its people and environment. These include active faults, earthquakes, tsunamis, volcanoes, landslides, snow avalanches, erosion, flooding, and permafrost, among others. However, very little field data currently exist in Alaska on which to delineate and describe many of these hazards. Even minimal baseline data are nonexistent in many areas targeted for hazards assessment. Without supporting scientific documentation, reliable natural hazards designations can not be made and significant harm to life, property, and the environment may result.

Identification and evaluation of geologic hazards are critical elements in the planning and design process for all kinds of infrastructure to guide location choices and prevent structural failure. Such information has been extensively used in the past to successfully prevent damage, injuries, and environmental impacts from geologic hazards. For example, severe environmental damage was avoided during the 2002 magnitude 7.9 Denali Fault earthquake, even though the Trans-Alaska oil pipeline was violently shifted several feet where it crosses the fault. Because the fault location and potential motion had been identified on the basis of pre-construction geologic studies, the pipeline was properly engineered to accommodate this fault offset. Breakage could have resulted in the spilling of large quantities of crude oil that would have flowed down the Delta, Tanana, and Yukon Rivers, causing significant environmental damage along the way and potentially impacting coastal habitats of the Yukon Delta. Without the basic geologic mapping and evaluation to identify and characterize the geologic hazard, the pipeline could not have been engineered to withstand the lateral offset and seismic shaking to which it was exposed during the earthquake.

Very specific to the coastal setting and the proposed project are the ramifications of villages currently sited along the Alaska coast that are experiencing severe impacts from erosion and flooding. Mitigation of these impacts, both in the short- and long-term, will run the gamut from simple beach armoring to construction of elaborate erosion-control structures to complete relocation of entire settlements. Baseline surficial and engineering-geologic/hazards maps will be critical to coastal districts as they develop and administer their coastal management plans in the context of these major undertakings.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

DGGS maps geology and geohazards around the state of Alaska with State General Fund and Capital Improvement Project funding, and with secondary funding from sources such as the Federal STATEMAP program through the U.S. Geological Survey. In the past, these projects have rarely had a coastal hazards component. CIAP funds are adding a strong coastal focus to DGGS mapping programs and enhancing ongoing hazard mapping efforts. DGGS recently received Capital Improvement Project funding for mapping geologic hazards in Alaska, with particular emphasis on hazards that could potentially be exacerbated by climate change. This funding can be leveraged with Federal funding from programs like STATEMAP which, with CIAP funds, will develop a comprehensive Alaska geohazards program.

Studies are being carried out in many individual communities to respond to and mitigate the effects of flooding and erosion, including those by the U.S. Corps of Engineers and local governments and planning agencies. Relocation studies have already begun for some communities, such as Newtok and Shishmaref. This project's assessment of geology and natural hazards over a larger area complements and enhances these more site-specific efforts and will provide valuable information for identifying potential relocation sites that will not repeat the mistakes of the past or fall victim to other, as-yet unforeseen natural hazards or conditions that may adversely impact the coastal environment and/or require future mitigation efforts at the new sites. The USGS is planning to fly a high-resolution LiDAR survey of the north coast of Alaska, and DGGS is encouraging them to extend their data collection efforts to the northwest coast of Alaska, including many of the communities that will likely be targeted by our hazard mapping efforts. We are considering partnering with the USGS in this effort by providing limited funding support for the survey if it includes our areas of interest around high-risk coastal communities. The Digital Elevation Models generated by this airborne survey will be extremely useful for documenting the location and magnitude of coastal erosion and would thus be a valuable tool for assessing potential development and/or relocation sites. DGGS will coordinate its efforts with the local, site-specific studies and community organizations in order to take full advantage of the work that is being done by other groups and share our own insights and results. We would hope to leverage logistical and data resources with all of these groups to the extent possible in order to maximize the return on our field studies and laboratory results.

COST SHARING OR MATCHING OF FUNDS

DGGS does not intend to use CIAP funds for cost sharing or matching purposes with other Federal agencies.

REFERENCES CITED

Alaska Climate Impact Assessment Commission, 2008, *Final Commission Report*: Alaska Climate Impact Assessment Commission Final Report to the Legislature, 125 p. http://www.housemajority.org/coms/cli/cli_finalreport_20080301.pdf

Immediate Action Workgroup, 2008, *Recommendations Report to the Governor's Subcabinet on Climate Change*: Immediate Action Workgroup Recommendations Report to the Governor's Subcabinet on Climate Change, 60 p. http://www.climatechange.alaska.gov/docs/iaw_dftrpt-21mar08-v6.pdf

U.S. Army Corps of Engineers-Alaska District, 2006, *Alaska Village Erosion Technical Assistance Program: An Examination of Erosion Issues in the Communities of Bethel, Dillingham, Kaktovik, Kivalina, Newtok, Shishmaref, and Unalakleet*: U.S. Army Corps of Engineers Report, 46 p. http://iss.poa.usace.army.mil/akerosion/references/AVETA%20Report%20-%20Compressed.pdf

United States General Accounting Office, 2004, *Alaska Native Villages: Villages Affected by Flooding and Erosion Have Difficulty Qualifying for Federal Assistance*: U.S. General Accounting Office Report GAO-04-895T, 21 p. http://www.gao.gov/new.items/d04895t.pdf

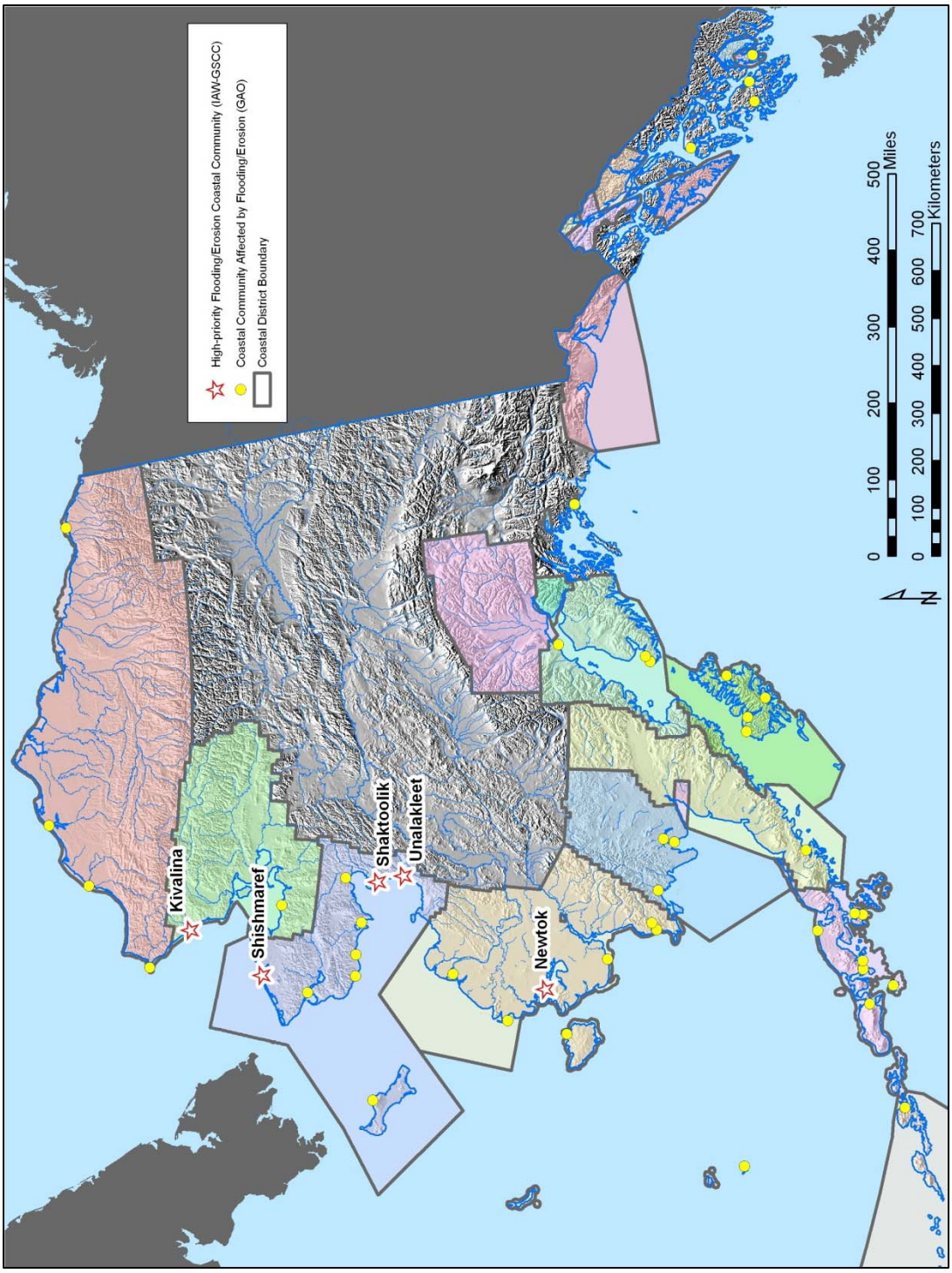

Figure 1. Map of Alaska showing Coastal Districts and coastal communities that the Immediate Action Workgroup of the Alaska Governor's Subcabinet on Climate Change has identified as being in greatest peril due to climate change phenomena, and therefore in most need of immediate actions to prevent loss of life and property. Additional candidate communities for hazards evaluation are also shown, based on a report by the Government Accountability Office (GAO).

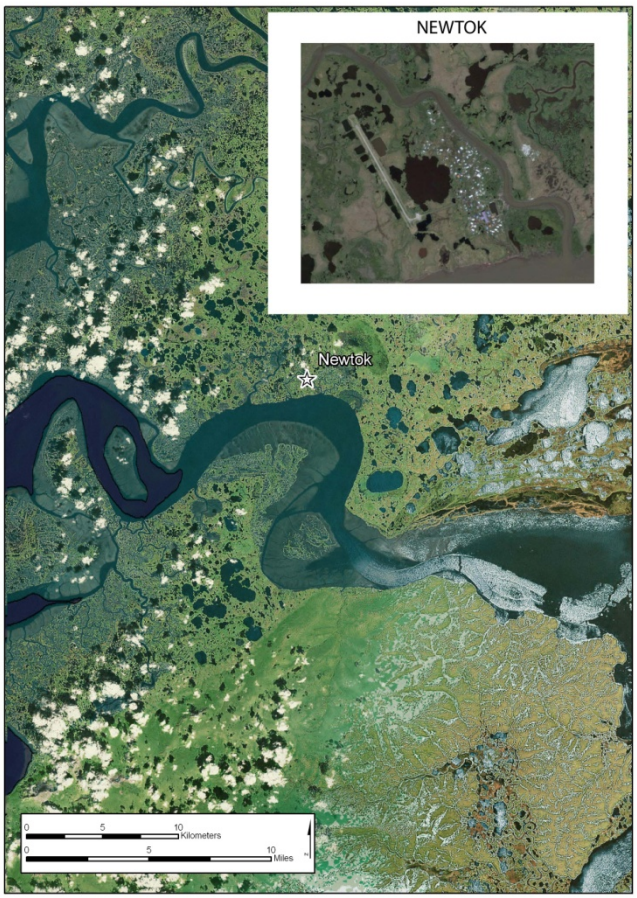

Figure 2. Maps of Shishmaref (pop. 609), Newtok (pop. 353), and Kivalina (pop. 398), communities that are endangered by severe flooding and erosion. These are some of the communities that are likely to be targeted for mapping studies by DGGS to assess local natural hazards that must be considered in the siting, design, construction, and operations of development projects in the coastal area

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT TITLE: Alaska Monitoring and Assessment Program -Chukchi Sea Coastal Survey

Note: This project was approved as part of the 2008 Approved Alaska CIAP Plan. The budget has been increased by $750,000. The additional funds will cover increases in costs since the original submittal and will allow for increased sampling.

PROJECT CONTACT

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PROJECT LOCATION

Chukchi Sea

PROJECT DURATION

4 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
2,150,000	168,000	560,000	560,000	112,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
2,150,000	1,400,000	0	750,000	0

PROJECT DESCRIPTION

In the 1990s, the Environmental Protection Agency (EPA) and National Oceanic and Atmospheric Administration (NOAA) embarked upon a National Coastal Assessment developed as part of the Environmental Monitoring and Assessment Program (EMAP) to survey the environmental condition of the Nation's coastal water resources. Alaska containing over 50% of the nation's coastline was left out of the survey until 2001, when five coastal survey regions were established for Alaska. The Alaska Department of Environmental Conservation (DEC) implemented this program as the Alaska Monitoring and Assessment Program (AKMAP). The AKMAP program is focused on conducting applied environmental research to provide, through

the use of a random sampling design, estimates of the spatial extent of water quality status based on stressors (chemical contaminants, water quality parameters, and physical changes, e.g. temperature, salinity) and indicators (e.g., benthic fish histopathology, macroinvertebrate diversity). This information can be used by resource managers and others to help protect or restore coastal marine environments and mitigate damage to the marine ecosystem. DEC has completed initial status surveys of Southcentral and Southeast, with field work to be just completed for the Aleutian survey. The report for the Southcentral Alaska coastal survey has been completed and can be found at http://www.dec.state.ak.us/water/wqamp/emap_sc.htm. Funding has not been forthcoming to implement and complete surveys of the remaining two regions, and we propose to utilize CIAP funds to complete a baseline coastal survey of one of three sub-regions within the "Northwest Alaska Beaufort and Chukchi Sea" region. The Chukchi Sea sub-region, from Barrow to Point Hope, is seeing major oil and gas resource survey and development pressure. Within the currently requested funding amount, the survey work will be focused on this sub-region adjacent to the Minerals Management Service (MMS) lease sale area #193. This coastal survey is key to responsibly protecting our coastal regions. It will also provide resource managers with the high quality scientific information they need to manage resource development.

MEASURABLE GOALS AND OBJECTIVES

This section provides several specific, though not the only, measurable outcomes of the AKMAP work.

- AKMAP sampling plan, Quality Assurance Project Plan, and administrative/contract documents will be completed in 2008 and pre-field season 2009.
- AKMAP survey team will complete sample collection and analyze water, sediment and biological samples during 2 years of field work in 2009 and 2010.
- AKMAP assessment results will be presented in a final DEC report in 2011, and future National Coastal Assessment reports, with information on:
    - Percent of area that has sediments with trace metals or organic contaminants levels exceeding Alaska Water Quality Standards criteria or other benchmarks.
    - Estimate of percentage of fish with chemical contaminants that exceed or do not exceed human or ecological health criteria.
- Public outreach will be conducted on the AKMAP Chukchi and Beaufort Assessments at the Alaska Forum on the Environment in 2009, 2010 and in 2011. A report that includes the presentations will be provided. Additional outreach will be detailed in the full project scope of work.
- All survey data, after undergoing a rigorous QA/QC, will be archived within the National EPA STORET system, and provided over the AKMAP website.
- Macroinvertebrate voucher collections will be maintained and established at the University of Alaska Fairbanks in addition to the taxonomic data provided in the final datasets.

CIAP AUTHORIZED USE

This project is consistent with CIAP Authorized Use Number 4: *Implementation of a federally approved marine, coastal or comprehensive conservation management plan.*

This project will continue implementation of the U.S. Environmental Protection Agency's Environmental Monitoring and Assessment Program, a federally approved comprehensive plan for the development of a long-term research effort to enable status and trend assessments of aquatic ecosystems across the U.S. The assessment results will also be incorporated into the State of Alaska's federal Clean Water Act Section 305(b) report on the condition of Alaska's waters. The project will help establish a baseline and identify what proportions, if any, of the coastal marine environment, such as sediments, water, or fish tissue, have contaminant levels that indicate potential impacts. Only this type of assessment can effectively provide state and federal resource managers and the public with an unbiased, statistically valid assessment of the condition of Alaska's coastal aquatic resources. AKMAP baseline assessment and future trend assessments are critical to establishing environmentally protective measures and evaluating their effectiveness in the coastal region as oil and gas development takes place.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Other partnerships, that could include in-kind services, equipment loans, splitting funding for vessel support, include 1) MMS environmental monitoring of the proposed lease sales or active leases in the Chukchi Sea area, 2) some level of support by EPA and NOAA, 3) University of Alaska (UA) School of Fisheries participation under the DEC/UA Memorandum of Understanding, 4) logistical support potentially for some areas provide for by resource developers, such as BP (who has provided DEC with a letter of support for AKMAP coastal assessments) and 5) potential participation and input from the North Slope Borough (North Slope Borough has provided DEC with a letter supporting AKMAP coastal assessments) and Northwest Arctic Borough.

COST SHARING OR MATCHING OF FUNDS

CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF FISH AND GAME

PROJECT TITLE: Monitoring Steller Sea Lions at Remote Sites in the Bering Sea

Note: This project was approved as part of the 2008 Alaska CIAP Plan. Only the funding per allocation year of CIAP has changed.

PROJECT CONTACT

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PROJECT LOCATION

Survey sights include SW Cape (St. Lawrence Island), Cape Newenham, and Sea Lion Rocks (Amak Island). Additional work to expand on-going surveys at Round Island (in Togiak Bay) may also occur. See attached map

PROJECT DURATION

3 years

ESTIMATED COST

Spending Estimate ($)			
TOTAL	**Year 1**	**Year 2**	**Year 3**
124,000	44,000	40,000	40,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
124,000	0	44,000	80,000	0

PROJECT DESCRIPTION

We will collect baseline data (i.e., counts, sex and age composition, identification of branded or tagged animals) on endangered Steller sea lions use of remote, rarely-surveyed sites in the Bering Sea, which will help assess the potential effects of oil and gas development (e.g., North Aleutian Basin) and possibly the on-going, large-scale commercial fisheries. We will survey three sites: SW Cape (St. Lawrence Island), Cape Newenham, and Sea Lion Rocks (Amak Island), and provide additional support to expand on-going surveys at Round Island (in Togiak Bay). Counts will provide a greater understanding of population trends at Cape Newenham, Round Island, and Sea Lion Rocks where counts have been conducted periodically (survey

frequency varies greatly by location) in the past and populations appear to have declined dramatically. Photo-documentation of branded and tagged animals will contribute to age-specific survival estimates, dispersal rates, and distribution patterns; documentation of animals entangled in marine debris, including fishing gear, will help us evaluate effects of commercial fisheries. No systematic surveys of this sort have been conducted at SW Cape and a great deal of information can be gained from this site, including much-need baseline data on numbers and sex/age composition, and perhaps most interesting, the origin of animals hauling out at SW Cape (it is unknown whether these animals are from rookeries in Alaska, Russia, or a combination).

MEASURABLE GOALS AND OBJECTIVES

The following measurable goals and objectives are for each of the three project years.

- Conduct 2-5 surveys per year (depending on site and weather) at Sea Lion Rocks, Cape Newenham, and SW Cape. Record number of seal lions hauled out, photograph branded and tagged animals, and document entanglements in marine debris.
- Produce a report that:
    - Estimates population trends of Steller sea lions in Bristol Bay (based on surveys at Cape Newenham and Round Island).
    - Compares new counts from Sea Lion Rocks and SW Cape with historical counts.
    - Identifies the country of origin and natal rookery of branded Steller sea lions hauling out at SW Cape, Cape Newenham, and Sea Lion Rocks.
    - Records the sex/age composition of Steller sea lions at SW Cape and Cape Newenham. Composition data from Cape Newenham will be compared with data from the early 1990s.
    - Describes the types of marine debris entangling Steller sea lions and when possible, evaluate the origin of the entangling materials (*e.g.,* commercial / sport fisheries, dumping).

- Provide brand data to the National Marine Mammal Lab (NMML), NOAA for inclusion in their age-specific survival estimates of Western Stock Steller sea lions.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project would fit under CIAP Use Number 4, *Implementation of a federally-approved marine, coastal or comprehensive conservation management plan.*

This project will provide critical baseline data essential to implementing the Alaska Coastal Management Program (ACMP), a federally approved program. Projects located within the coastal zone that require state or federal permits, as well as federal activities, must be found consistent with the state standards that are part of the ACMP, including the following:

11 AAC 112.300(b)(5)

(5) rocky islands and sea cliffs must be managed to

(A) avoid, minimize, or mitigate significant adverse impacts to habitat used by coastal species; and

(B) avoid the introduction of competing or destructive species and predators;

Basic data on sea lion numbers, distribution, and movements gathered by this project will provide information necessary for resource managers to effectively avoid, minimize, or develop

appropriate measures to mitigate impacts to sea lions from development. This will be especially useful information if oil and gas development proceeds in this region. Minerals Management Service is currently evaluating the North Aleutian Basin Lease Sale 214 in the project area.

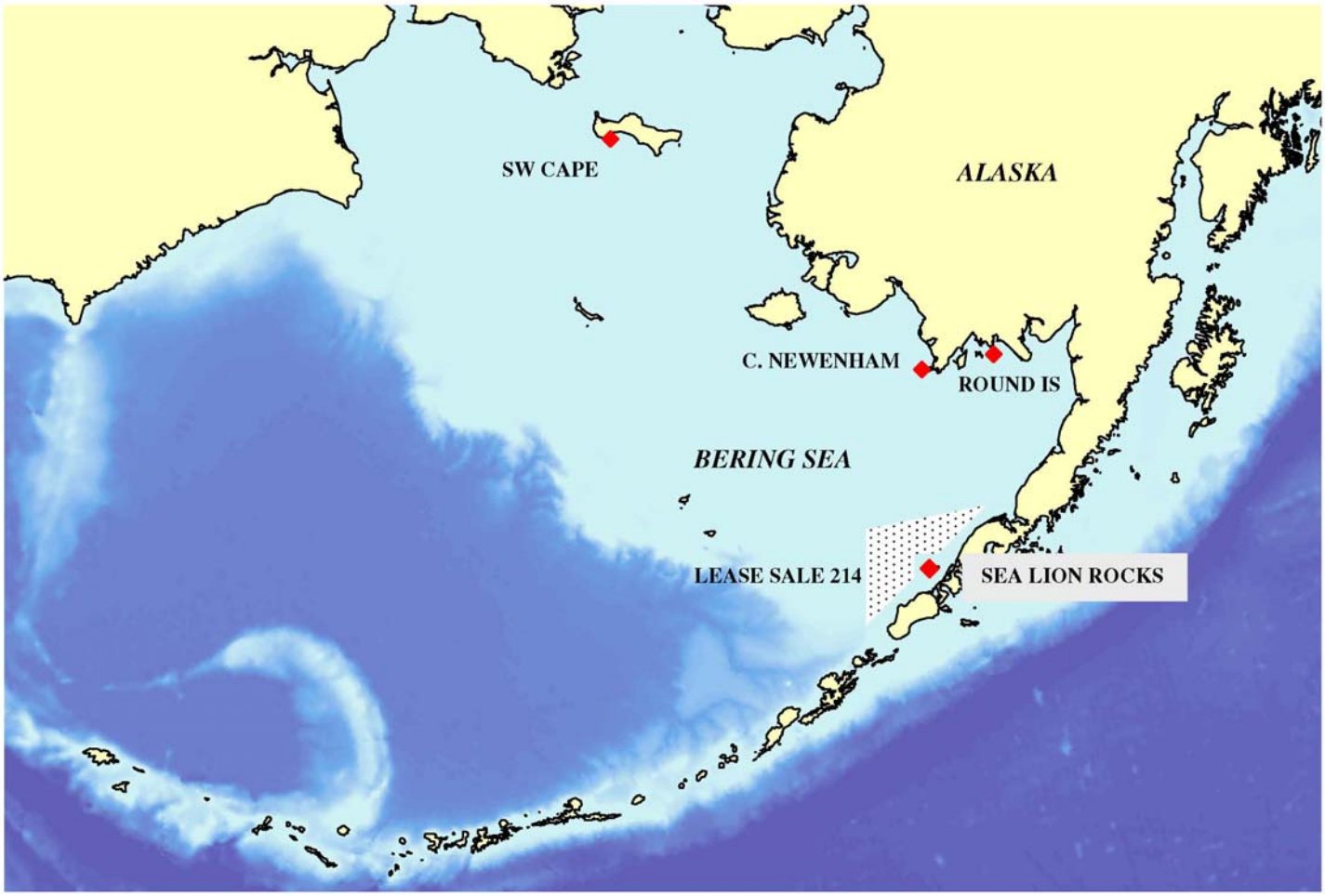
COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Steller sea lions are currently listed as an endangered species west of Cape Suckling, Alaska (Long. 144') and as threatened in the eastern stock throughout Southeast Alaska. The western population has experienced a decline in excess of 80% over the last 30 years while the eastern population has increased. The reasons for these trends are unknown. However, by comparing different parameters between the populations, the Alaska Department of Fish and Game (ADF&G), in close cooperation with NMML, hopes to find measurable factors to help explain the population differences. In order to examine any hypotheses comparing these two apparently different populations, basic demographic data are needed, especially individual age-specific data. In closely coordinated studies, the Steller sea lion programs of ADF&G and NMML have marked sea lions for individual identification. Resightings of these individuals are used to estimate age-specific survival rates, reproductive rates, and to describe distribution and movement patterns. ADF&G and NMML have extensive brand-resight programs throughout most of Alaska; however, Cape Newenham and SW Cape, in the Bering Sea, have not been regularly (or ever) surveyed. For several years, ADF&G and NMML have discussed options for surveying these sites but have been unable due to logistics and expense of working in these areas. Data collected from these sites would benefit both agencies in understanding Steller sea lion population trends, movements, and distribution patterns. Brand-resight data would be used in estimates of age-specific survival rates and those rates compared between animals born in the eastern and western stocks. ADF&G and NMML have a long history of sharing brand-resight data and have worked closely to ensure that surveys are conducted throughout Alaska. Data from Sea Lion Rocks during July will be used in survival rate estimates but may also be used to estimate reproductive rates. In addition to our closely coordinated studies with NMML to collect and analyze Steller sea lion brand-resight data, ADF&G also works with Glacier Bay National Park, the University of British Columbia, the Oregon Department of Fish and Wildlife, and the Alaska Sea Life Center to collect observations of branded animals.

ADF&G, through a NOAA cooperative grant, will cover the majority of salary costs to conduct surveys, analyze data, and write a report. Observations of branded animals from the western stock will be included in analyses conducted by NMML. Round Island staff are supported by the ADF&G Watchable Wildlife Program and the U.S. Fish and Wildlife Service. Equipment and logistic support will be provided by ADF&G and NMML. The Alaska Department of Public Safety will provide logistics support to survey Sea Lion Rocks/Amak Island.

COST SHARING OR MATCHING OF FUNDS

We do not intend on using CIAP funds for cost sharing or matching purposes.



Map of Steller sea lion study sites (red diamonds) in relation to Lease Sale 21

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF FISH AND GAME

PROJECT TITLE: Hydro-acoustic Monitoring of Ambient Noise and Marine Mammals in the Chukchi Sea

Note: This project was approved as part of the 2008 Alaska CIAP Plan. Only the funding per allocation year of CIAP has changed.

PROJECT CONTACT

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PROJECT LOCATION
Chukchi Sea

PROJECT DURATION
3 year

ESTIMATED COST

Spending Estimate ($)			
TOTAL	**Year 1**	**Year 2**	**Year 3**
330,000	150,000	80,000	100,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
330,000	0	150,000	180,000	0

PROJECT DESCRIPTION
Monitoring the levels of both natural (i.e., 'ambient') and anthropogenic sources of noise in the marine waters of Alaska is needed to establish a baseline that is necessary to determine possible impacts of noise on marine mammals. Hydro-acoustic instruments and associated computer software are available that can record and distinguish among ambient noise, anthropogenic activities, and calls made by marine mammals. Hydro-acoustic instruments will be deployed in the Chukchi Sea, an area where future outer continental shelf (OCS) activity is planned and is also recognized as important to numerous species of marine mammals. Further, substantial changes in the marine ecosystem of the Chukchi Sea are anticipated due to climate change, which could alter acoustic propagation due to the thinning and reduction of sea ice. Thus,

changes in natural noise sources, combined with a probable increase in anthropogenic noise sources due to oil and gas activity and vessel traffic, will likely occur in the Chukchi Sea. Establishing a baseline prior to these probable increases in noise from increased anthropogenic activities, and before the distribution and abundance of marine mammals shifts in response to changing sea ice conditions, is crucial to the development of effective mitigation measures.

MEASURABLE GOALS AND OBJECTIVES

Year 1:

- Convene a workshop to develop a strategy for hydro-acoustic monitoring in the Chukchi Sea, with participants from the oil and gas industry, Alaska Native marine mammal organizations, the North Slope Borough, the State of Alaska, National Oceanic and Atmospheric Administration (NOAA) Fisheries, and Minerals Management Service (MMS). Issues to be addressed include (1) determining priority research objectives, (2) temporal and spatial considerations of instrument deployments, (3) the type of instruments to be deployed, and (4) deployment logistics. A report summarizing the recommendations within the overall strategy will be produced and made available within 2 months following the workshop.
- Following the recommendations of the strategy for hydro-acoustic monitoring developed in the above workshop, deploy three hydro-acoustic instruments in the Chukchi Sea to establish a baseline of both natural (ambient) and anthropogenic sources of noise in marine waters.

Year 2:

- Refurbish and redeploy the 3 hydro-acoustic instruments in the Chukchi Sea.

Year 3:

- Complete analysis of data acquired in Years 1 and 2. Document findings in a report.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project meets CIAP Authorized Use number 4, *Implementation of a federally-approved marine, coastal or comprehensive conservation management plan.* The Alaska Coastal Management Program (ACMP) is a federally approved plan. Agency and North Slope Borough staff implement the ACMP by applying state standards to projects constructed in the Alaska coastal zone. The project area has been proposed by the North Slope Borough as a marine mammal subsistence use area. The state has approved this designation. This project would provide information about existing noise levels and possible impacts on marine mammals. This information will provide background or baseline information necessary to assess impacts of oil and gas development projects and to minimize or mitigate impacts in order to comply with the ACMP. The project will help implement the following specific regulations of the ACMP:

> ***11 AAC 112.230. Energy facilities.***
> *(a) The siting and approval of major energy facilities by districts and state agencies must be based, to the extent practicable, on the following standards:*
> > *(1) site facilities so as to minimize adverse environmental and social effects while satisfying industrial requirements;*

(11) site facilities so as to minimize the probability, along shipping routes, of spills or other forms of contamination that would affect fishing grounds, spawning grounds, and other biologically productive or vulnerable habitats, including marine mammal rookeries and hauling out grounds and waterfowl nesting areas;
(12) site facilities so that design and construction of those facilities and support infrastructures in coastal areas will allow for the free passage and movement of fish and wildlife with due consideration for historic migratory patterns;
(13) site facilities so that areas of particular scenic, recreational, environmental, or cultural value, identified in district plans, will be protected;
(14) site facilities in areas of least biological productivity, diversity, and vulnerability and where effluents and spills can be controlled or contained;

11 AAC 112.240. Utility routes and facilities.
(b)(2) Utility routes and facilities along the coast must avoid, minimize, or mitigate disruption in known or reasonably foreseeable wildlife transit;

11 AAC 112.270. Subsistence.
(a) A project within a subsistence use area designated by the department or under 11 AAC 114.250(g) must avoid or minimize impacts to subsistence uses of coastal resources.
(b) For a project within a subsistence use area designated under 11 AAC 114.250(g), the applicant shall submit an analysis or evaluation of reasonably foreseeable adverse impacts of the project on subsistence use as part of
(1) a consistency review packet submitted under 11 AAC 110.215; and
(2) a consistency evaluation under 15 C.F.R. 930.39, 15 C.F.R. 930.58, or 15 C.F.R. 930.76.

11 AAC 112.300. Habitats.
(b) (1) offshore areas must be managed to avoid, minimize, or mitigate significant adverse impacts to competing uses such as commercial, recreational, or subsistence fishing, to the extent that those uses are determined to be in competition with the proposed use;
(b)(9)(B) important habitat identified under (c)(1)(B) or (C) of this section must be managed to avoid, minimize, or mitigate significant adverse impacts to the special productivity of the habitat.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Hydro-acoustic projects have recently been conducted in the Beaufort and Bering seas, yet there is a paucity of data from the Chukchi Sea. This project will seek to maximize collaboration with federal, private, and university entities to secure additional funding, along with scientific expertise and logistical support. Such synergism with the Alaska Department of Fish and Game marine mammal program has been successfully achieved in previous studies. The Project Contact developed the goals and objectives for this proposed project in coordination with a Science Specialist with NOAA Fisheries that has participated in numerous successful collaborative acoustic research projects on whales in Alaska and has over two decades of research experience on the ecology of whales in Alaska. Further coordination took place with a

Marine Ecologist in the MMS Environmental Studies Section (Alaska OCS Region) to ensure an understanding of other acoustic research in the Arctic marine waters. Additional coordination took place with a Wildlife Scientist of the North Slope Borough familiar with current acoustic projects and seismic operations in the Chukchi Sea.

COST SHARING OR MATCHING OF FUNDS

CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Environmental Conservation
Spill Prevention and Response Division

PROJECT TITLE: Local and Regional Spill Prevention and Response Planning

Note: This project was approved as four distinct projects in the approved 2008 Alaska CIAP Plan (Tier 2, Projects 1-4). This amendment combines the 4 projects into one project, provides a revised budget and timeline, changes the project contact, and moves the project into Tier 1.

PROJECT CONTACT

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PROJECT LOCATION

Coastal communities to be included in this project are those located in Cook Inlet, the Northwest Arctic, the Aleutians, North Slope, Bristol Bay, Western Alaska, and Southeast Alaska areas. Other locations will include communities throughout the State of Alaska who may be interested in developing a local spill response capability.

PROJECT DURATION

Four years.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
500,000	200,000	150,000	100,000	50,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
500,000	0	0	500,000	0

PROJECT DESCRIPTION

This project provides the following four key initiatives to improve the overall coastal spill prevention and response capability for the State of Alaska.

1. PPOR: It will pre-identify potential places of refuge (PPOR) for disabled vessels, and provide specific information to facilitate rapid and fact-based decisions to relocate the vessel and minimize the potential for impact to the coastline. In the event a large vessel sustains loss of power or steerage, immediate action is necessary to bring the vessel under tow, and to prevent the vessel from going aground on Alaska's coastline.
2. ETS: The project also funds the purchase and pre-staging of two emergency vessel towing systems (ETS) at key locations in the State to allow rapid deployment. Contractual assistance will be procured to provide training to the local communities on deployment and operation of ETS packages.
3. GRS: This project will develop geographic response strategies (GRS), consistent with pre-identified spill response tactics for protecting critical areas in the event of an oil spill. The GRS documents are a key tool to rapidly respond to an oil spill and deploy the necessary equipment, often from the state's pre-positioned equipment containers.
4. Coastal Community Spill Response Enhancement**:** Due to the vast size of the State and the remote location of many of its communities, local residents are frequently the first line of defense in responding to oil and hazardous substance releases.
   This project includes enhancing local spill response capacity by purchasing, pre-positioning and maintaining spill response containers and response equipment, and maintaining a trained cadre of personnel at the local level. Previous vessel groundings on Alaska's coastlines have caused major environmental damage. By improving the state response system and enhancing the overall spill response capability, this project will protect coastal areas from the effects of oil spills as well as mitigate potential damage to fish, wildlife, and other natural resources.

Maps of PPOR and GRS development status for the State of Alaska are provided as attachments. A map with the current status of community spill response agreements and spill response containers is also attached. An expanded concept of operation diagram for the ETS is attached as well.

The measurable outcomes will be the production of PPOR and GRS planning documents (see attached), pre-deployment of additional ETS to prevent disabled vessels from grounding on Alaska coastlines, and preparing and maintaining a local response capability to provide the first line of defense in the event of an oil spill.

Specific Tasks: See the attached document for specific milestones for each of the four initiatives. The following represents the general overall tasks for each initiative.

Tasks for the Potential Places of Refuge (PPOR) Initiative:

DEC and the contractor will coordinate with US Coast Guard, industry, oil spill cooperatives, local communities, federally recognized tribes, marine pilots, and other potential sources of information.

Convene an initial work group meeting and begin discussion of PPOR (to include coordination with the marine pilots association). Identify, discuss and prioritize PPOR sites, then develop draft PPOR data and prioritization for the subareas.

Develop the initial and final draft documents describing PPOR documents for the subareas based on work group inputs and discussion, and review of the risk assessment maps previously produced under a different project.

Develop the final PPOR document and incorporate appropriate comments as directed by the work group. The final products will be posted on the DEC website and incorporated into the respective oil and hazardous substance spill contingency plan for each of the subareas.

Tasks for the Geographic Response Strategies (GRS) Initiative:

DEC and the contractor will coordinate with US Coast Guard, industry, oil spill cooperatives, local communities, federally recognized tribes, and other potential sources of information.

Convene an initial work group meeting and begin discussion of GRS development. Identify, discuss and prioritize sensitive areas to be protected, and then develop draft GRS data and prioritization for the subareas.

Develop the initial and final draft documents describing GRS based on work group inputs and discussion, and review of the sensitive areas protection prioritization scheme.

Develop the final GRS document and incorporate appropriate comments as directed by the work group. The final products will be posted on the DEC website and incorporated into the respective oil and hazardous substance spill contingency plan for each of the subareas.

Tasks for the Emergency Towing System (ETS) Initiative:

Tasks include identification of two Alaskan communities, by priority, for the receipt of ETS packages. Prior coordination will be accomplished with the local community to ensure they are fully aware of their responsibilities. A standard operating guideline document specific to each community will also be developed through the use of a DEC term contractor. The outcome will be a pre-positioned ETS package at a strategic location which can be rapidly deployed to rescue a vessel in distress. This pre-planned action minimizes the time involved to initiate emergency tow procedures for the vessel, and consequently minimizes the potential for the vessel to go aground and sustain an oil or hazardous substance spill. The ultimate benefit is the protection of the coastline and minimizing impacts to critical fish, wildlife, and natural resource habitat. The DEC website will be updated and information will also be incorporated into the respective oil and hazardous substance spill contingency plan for each of the subareas.

Tasks for the Coastal Community Spill Response Enhancement Initiative:

Tasks include identification of six communities (two per year over a three-year period) who are interested in supporting DEC and enhancing their overall spill response capabilities through the acquisition and maintenance of spill response equipment, plus receiving associated training for local responders. DEC will also arrange for the pre-positioning of a spill response container at the selected communities.

Another task includes dispatching DEC personnel to three locations each year where spill response containers have previously been staged under separate funding. The personnel will conduct a full inventory; perform preventative maintenance and order replacement supplies and equipment for those containers.

The DEC website will be updated and information will also be incorporated into the respective oil and hazardous substance spill contingency plan for each of the subareas.

MEASUREABLE GOALS AND OBJECTIVES

Potential Places of Refuge (PPOR) Deliverables:
Production of 25-35 PPOR documents for each subarea (5-7 each for the North Slope, Northwest Arctic, Bristol Bay, and the Western Alaska subareas) in the format depicted in the attachment.

Geographic Response Strategies (GRS) Deliverables:
Production of 50-75 GRS documents (10-15 GRS documents each for the North Slope, Northwest Arctic, Bristol Bay, the Aleutians, and Western Alaska subareas) in the format depicted in the attachment.

Emergency Towing Systems (ETS) Deliverables:
Delivery of two ETS packages to selected local communities. Following training and development of standard operating guidelines, the goal is to ensure each community is operationally ready to conduct maintenance and be able to mobilize the ETS package to the harbor or airport for deployment on short notice.

Coastal Community Spill Response Enhancements- Deliverables:
The overall objective for this initiative is to have six community response agreements signed and in place (two agreements per year over a three-year period). In addition to the agreements ADEC will locate a fully equipped spill response containers in each of these six communities (two per year) and provide training in each community the same year the agreements are signed.

DEC personnel will travel to three locations per year where spill response containers have already been staged with separate funding. The personnel will conduct a full inventory, perform preventative maintenance, and order replacement supplies and equipment for those containers.

Note: All completed products for the four initiatives will be included in the appropriate subarea plan for use by federal, state, local, tribal agencies, and commercial vessel operators. The completed products will also be posted on the following DEC public websites for ease of access for interested parties.

Geographic Response Strategies: http://www.dec.state.ak.us/spar/perp/grs/home.htm

Potential Places of Refuge: http://www.dec.state.ak.us/spar/perp/ppor/home.htm

Emergency Towing Systems: http://www.dec.state.ak.us/spar/perp/aiets/home.htm

Community Spill Response: http://www.dec.state.ak.us/spar/perp/local_resp.htm

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project and the four initiatives are consistent with CIAP Authorized Use # 1: *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.*

Alaska's local communities and pristine coastal environment could be significantly impacted if marine spills are not responded to and contained immediately. With the increased risk of vessel accidents/incidents, the need for pre-identified potential places of refuge, geographical response strategies, pre-positioned emergency towing systems, and enhanced local spill response capabilities is critical.

- The PPOR effort provides a key tool to respond to a disabled vessel and to take steps to prevent oil spills.
- The ETS packages serve to reduce the potential for oil spills by positioning equipment that can be used to rescue disabled vessels.
- The GRS provides spill responders with pre-identified tactics and strategies for rapidly deploying spill response equipment.
- Alaska's coastal communities provide the first line of defense against spills to the marine environment. Pre-positioning spill response assets and maintaining a trained cadre of personnel at the local level significantly enhances the State's ability to successfully respond and minimize the impacts of any oil spill in the State.

The first line of defense will be to take the vessel under emergency tow to a pre-identified place of refuge. If a spill occurs, the pre-developed geographic response strategies will be used by trained and equipped local spill responders to protect critical sensitive areas and minimize the impact to Alaska's coastline. Without these local and regional spill response enhancements, a stricken vessel could possibly run aground, and the ensuing oil and hazardous substance spill could result in catastrophic and long–term damage to Alaska's coastline. By improving the state's response system and reducing the risk of oil spills, this project will both protect coastal areas from the effects of coastal oil spills as well as mitigate potential damage to fish, wildlife and other natural resources.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The following are typical Federal participants for past projects:

U.S. Coast Guard
U.S. Department of Commerce (NOAA)
U.S. Department of the Interior (including U.S. Fish and Wildlife Service)
U.S. Environmental Protection Agency

U.S. Army Corps of Engineers
Federally Recognized Tribes

Other non-federal agencies which will be involved in this project include:
Alaska Department of Environmental Conservation
Alaska Department of Fish and Game
Alaska Department of Natural Resources
Industry Oil Spill Cooperatives
Local Community Governments
Commercial Vessel Operators
Marine Pilots Association
Marine Towing Companies
Alaska Maritime Agencies
Environmental Interest Groups

COST SHARING OR MATCHING OF FUNDS
No cost-sharing anticipated.

Enclosures:
Hypothetical Sequence of Events and Relationship of the Four Initiatives
Emergency Towing System – Concept of Operation
Status of PPOR Development in Alaska (map)
Sample PPOR Deliverable
Status of GRS Development in Alaska (map)
Sample GRS Deliverable
Status of Community Spill Response Enhancements in Alaska (map)

Hypothetical Sequence of Events and Relationship of the Four Initiatives

Vessel Issues Distress Call to Coast Guard

Vessel Has Propulsion and Steerage

Vessel Directed to Place of Refuge

PPOR

Vessel Sustains Loss of Propulsion or Steerage

ETS Dispatched via Tow Tug or Other Available Vessel

ETS

Vessel Towed to Port or Place of Refuge

Vessel is Discharging Oil at Port or Place of Refuge

Local Responders Use pre-developed GRS and Spill Response Equipment to Protect Critical Coastline Sensitive Areas

GRS
AND
LOCAL COMMUNITY RESPONSE ENHANCEMENTS

Emergency Towing System – Concept of Operation

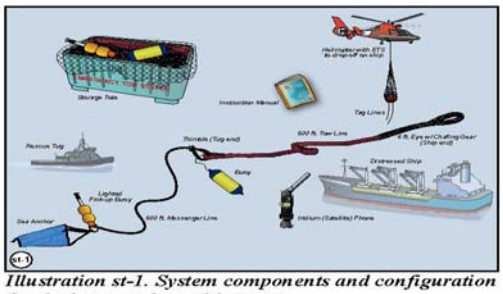


Illustration st-1. System components and configuration for deployment from ship to tug.

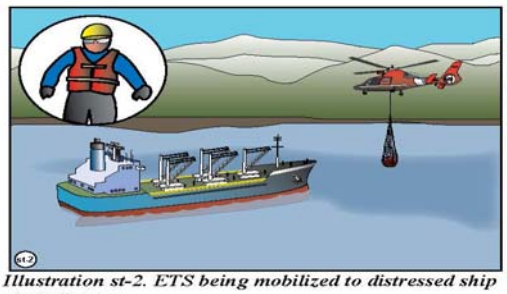


Illustration st-2. ETS being mobilized to distressed ship via helicopter.

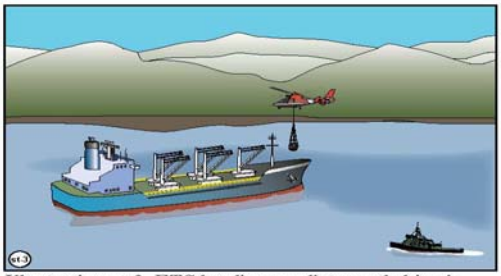


Illustration st-3. ETS landing on distressed ship via helicopter.

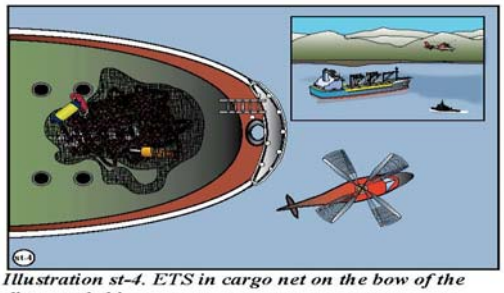


Illustration st-4. ETS in cargo net on the bow of the distressed ship.

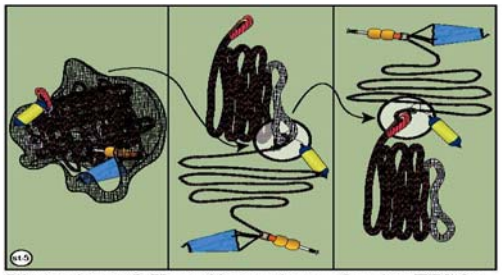


Illustration st-5. Unpacking and reconfiguring ETS for ship to tug deployment. Detach Messenger Line and buoy from the Ship's Eye and reattach the Messenger Line and buoy to the Tug's Thimble end of the Tow Line.

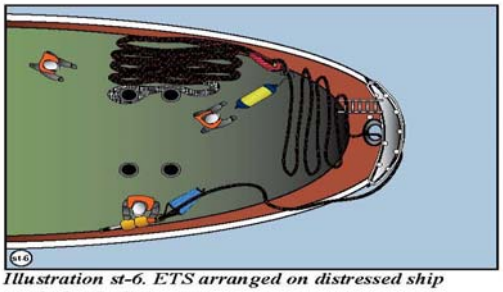


Illustration st-6. ETS arranged on distressed ship ready for deployment.

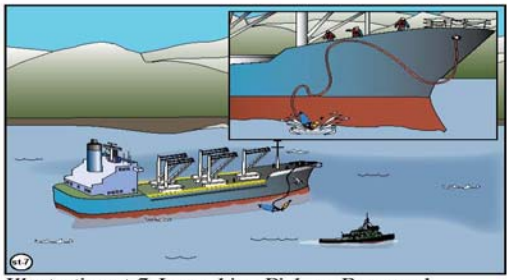


Illustration st-7. Launching Pick-up Buoy and Messenger Line from the distressed ship.

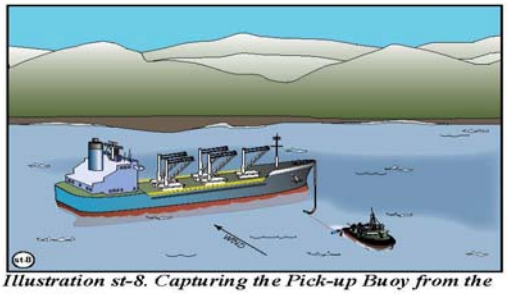


Illustration st-8. Capturing the Pick-up Buoy from the rescue tug.

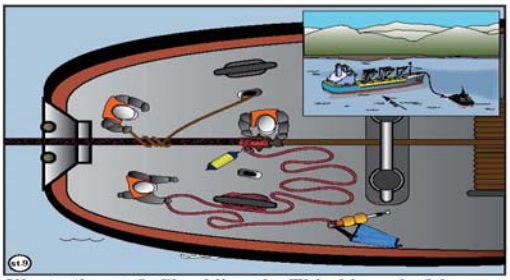


Illustration st-9. Shackling the Thimble end of the Tow Line to the rescue tug's tow wire.

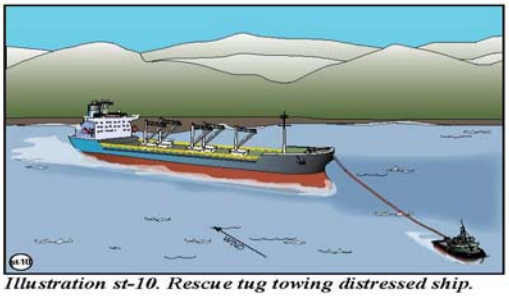
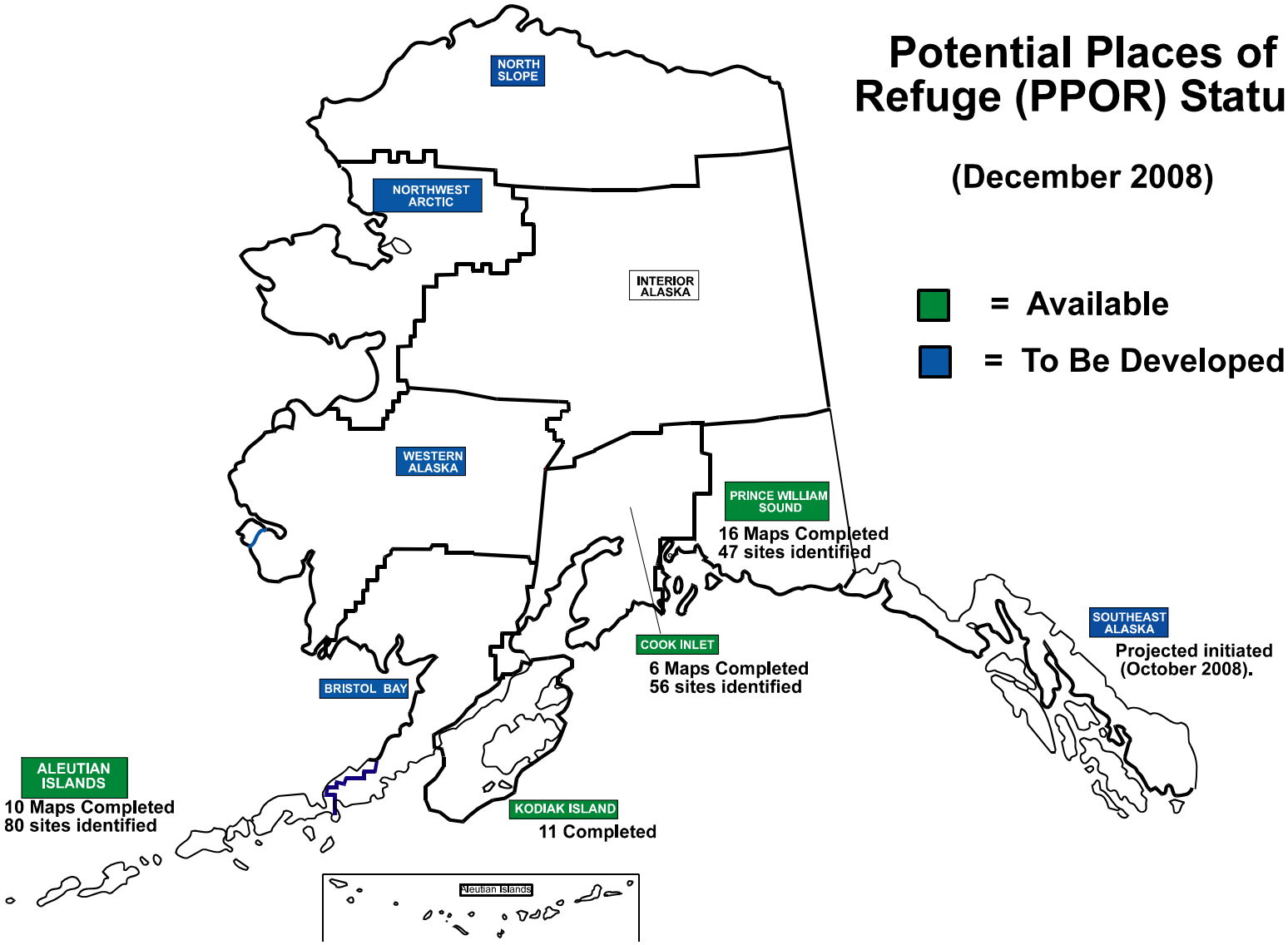
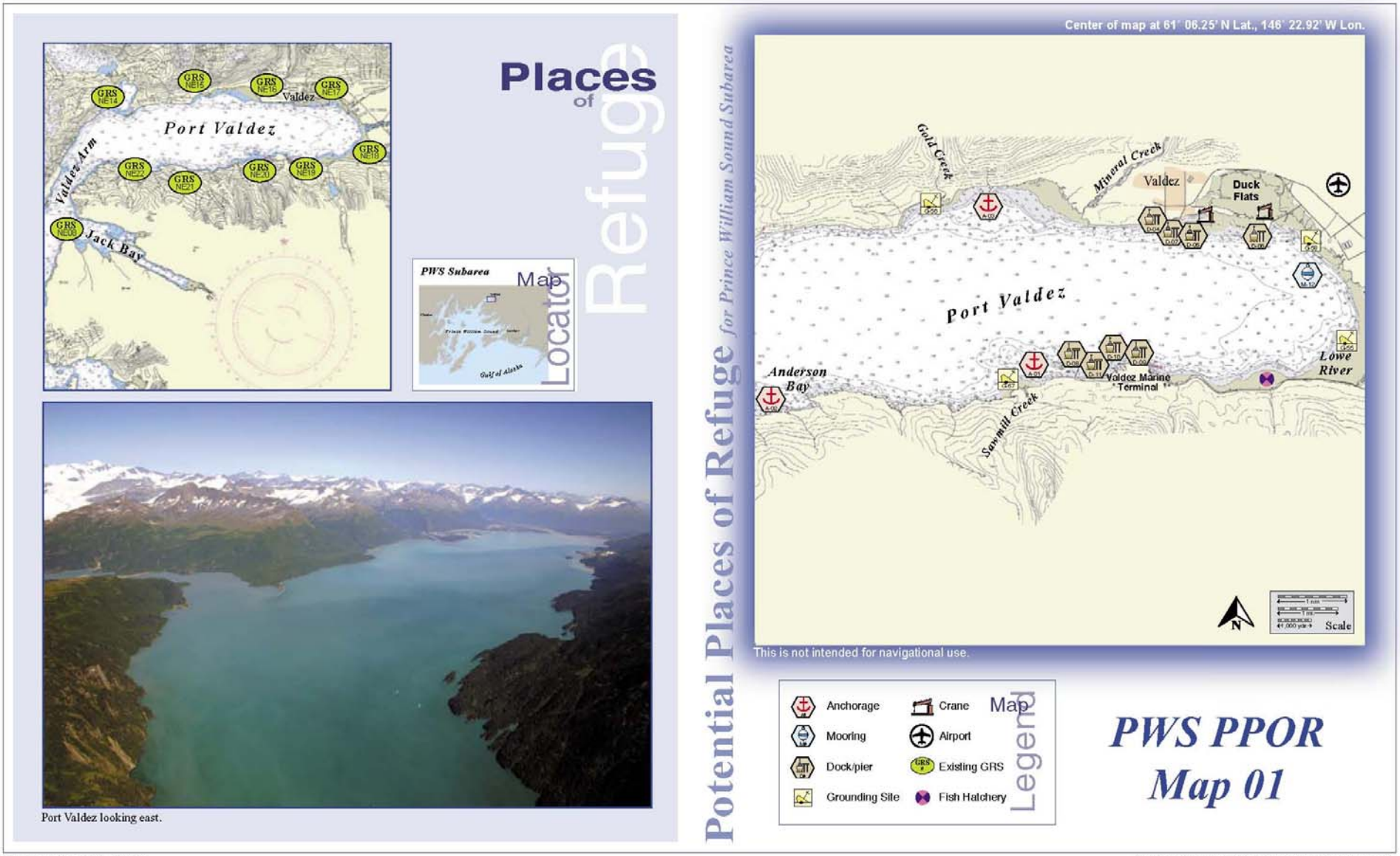


Illustration st-10. Rescue tug towing distressed ship.


Potential Places of Refuge (PPOR) Status
(December 2008)
= Available
= To Be Developed
NORTH SLOPE
NORTHWEST ARCTIC
INTERIOR ALASKA
WESTERN ALASKA
PRINCE WILLIAM SOUND
16 Maps Completed
47 sites identified
SOUTHEAST ALASKA
Projected initiated
(October 2008).
COOK INLET
6 Maps Completed
56 sites identified
BRISTOL BAY
ALEUTIAN ISLANDS
10 Maps Completed
80 sites identified
KODIAK ISLAND
11 Completed
Aleutian Islands


Places of Refuge
Port Valdez
Valdez Arm
Jack Bay
Valdez
GRS NE14
GRS NE15
GRS NE16
GRS NE17
GRS NE18
GRS NE19
GRS NE20
GRS NE21
GRS NE22
GRS NE23
PWS Subarea
Map Locator
Gulf of Alaska
Port Valdez looking east.
Potential Places of Refuge for Prince William Sound Subarea
Center of map at 61° 06.25' N Lat., 146° 22.92' W Lon.
Gold Creek
Mineral Creek
Valdez
Duck Flats
Port Valdez
Anderson Bay
Sawmill Creek
Valdez Marine Terminal
Lowe River
Scale
This is not intended for navigational use.
Legend
Anchorage
Mooring
Dock/pier
Grounding Site
Crane
Airport
Existing GRS
Fish Hatchery
PWS PPOR
Map 01

Site Information for *PWS PPOR Map 01*

PPOR-01 Port Valdez Physical and Operational Characteristics

	A01 West Sawmill Spit Anchorage	A02 Anderson Bay Anchorage	A03 Gold Creek Anchorage	D04 Valdez City Dock	D05 SERVS Dock	D06 Valdez Container Terminal	D07 Valdez Petroleum Terminal	D08 Valdez Marine Terminal #1	D09 Valdez Marine Terminal #3	D10 Valdez Marine Terminal #4	D11 Valdez Marine Terminal #5	M12 SERVS Buoys
Maximum Vessel Size	Light draft, up to 20,000 Gross Tons	Shallow draft, less than 300 Gross Tons	Deep draft, greater than 20,000 Gross Tons	Light draft, up to 20,000 Gross Tons	Light draft, up to 20,000 Gross Tons	Deep draft, greater than 20,000 Gross Tons	Light draft, up to 20,000 Gross Tons	Deep draft, greater than 20,000 Gross Tons	Deep draft, greater than 20,000 Gross Tons	Deep draft, greater than 20,000 Gross Tons	Deep draft, greater than 20,000 Gross Tons	Light draft, up to 20,000 Gross Tons
Contact	N/A	N/A	N/A	Port Operations Manager 907-835-4564	SERVS Manager 907-834-6620	Port Operations Manager 907-835-4564	Facility Manager 907-835-2002	Alyeska Pipeline Service Company, Terminal Manager: 907-834-6601				SERVS Manager 907-834-6620
Navigational Approach	Approach from N,E,W	Approach from N,NW,NE	Approach from S,SW,SE	Approach from the S,SW	Approach from the S,W	Approach from the S,W	Approach from the S,W	Approach from the N,E,W	Approach from the N,E,W	Approach from the N,E,W	Approach from the N,E,W	Approach from the W
Minimum Water Depths	13 Fathoms in swing area	10 Fathoms in swing area	13 Fathoms in swing area	6.5 Fathoms	6.2 Fathoms	11 Fathoms	11 Fathoms	8 Fathoms (Berth #3)				42 Fathoms
Maximum Water Depth	45 Fathoms in the swing area	22 Fathoms in the swing area	36 Fathoms in the swing area					13 Fathoms (Berth #5)				42 Fathoms in the swing area
Maximum Vessel Draft	50 ft.	50 ft.	50 ft.	30 ft.	30 ft.	50 ft.	50 ft.	65 ft.	65 ft.	65 ft.	65 ft.	65 ft.
Swing Room/Dock Face	1200 ft.	1200 ft.	1100 ft.	600 ft.	560 ft.	1200 ft.	200 ft.	390 ft./total moorage-1050ft.	122 ft./total moorage-1050 ft.	122 ft./total moorage-1450 ft.	122 ft./total moorage-1450 ft.	2000 ft.
Bottom Type	Mud			N/A								
Docks/Piers	Nearest-D08-D11 Valdez Marine Terminal	Nearest-D08-D11 Valdez Marine Terminal	Nearest-D04 Valdez City Dock	61° 07.39N 146° 21.69W	61° 07.39N 146° 21.45W	61° 07.28N 146° 18.48W	61° 07.40N 146° 21.45W	61° 05.39N 146° 22.10W	61° 05.39N 146° 23.04W	61° 05.33N 146° 23.74W	61° 05.40N 146° 24.22W	Nearest-D07 Valdez Petroleum Terminal
Moorings	Nearest Moorings are M12 SERVS Buoys											61° 06.41N 146° 16.42W
Anchorages	61° 05.39N 146° 25.79W	61° 04.83N 146° 33.84W	61° 07.64N 146° 27.05W	Nearest-A03 Gold Creek Anchorage								
Firefighting Anchorages	A01 West Sawmill Spit Anchorage,A02 Anderson Bay Anchorage,A03 Gold Creek Anchorage,M12 SERVS Buoys											
Grounding Sites	G55 Lowe River Mud Flats, G56 Gold Creek, G57 Sawmill Spit, G-58 Old Valdez Town Site											
Prevailing Winds	NE (Oct-April), SW (May-Sept.)											
Currents	Currents in the port are negligible except for the entrance at Valdez Narrows.											
Tides	Mean High Water- 11.1 (Higher- 12.1) , Mean Low Water- 1.5 (Lower- -6.0)											
Sea Conditions	Port Valdez is sheltered from extreme sea states. NE winter storm build 3 to 4 ft. waves.											
Shelter from Severe Storms	Port Valdez is sheltered from extreme storms.											
Fog	Fog can occur during all seasons.											
Ice	Entrance to Valdez Narrows can experience ice flow from the Columbia Glacier.											

PPOR-01 Port Valdez Stakeholders

	Contact	Number	Address	E-mail
Department of the Interior	Regional Environmental Assisstant	(907)271-5011	1689 C Street Anchorage, AK 99501	douglas_mutter@ios.doi.gov
State of Alaska Department of Natural Resources	Natural Resource Manager	(907)269-8548	550 West 7th Ave. Anchorage, AK 99504	samm@dnr.state.ak.us
National Marine Fisheries Service/ NOAA	Protected Resources Biologist	(907)271-3023	222 West 7th Ave. #43 Anchorage, AK 99513	brad.smith@noaa.gov
Alaska Department of Fish & Game	Habitat Biologist	(907)267-2338	333 Raspberry Road Anchorage, AK 99518	mark_fink@fishgame.state.ak.us
Prince William Sound Regional Citizens Advisory Council	Executive Director	(907)277-7222	3709 Spenard Rd. Anchorage, AK 99503	devens@pwsrcac.org
Alyeska Pipeline Service Company	SERVS Duty Officer	(907)834-6901	P.O. BOX 196660 Anchorage, AK 99519	alyeskamail@alyeska-pipeline.com
City of Valdez	Valdez Police Department	(907)835-4560	PO Box 307 Valdez, AK 99686	ddengel@ci.valdez.ak.us
For Native allotments, contact the Department of the Interior	Regional Environmental Assistant	(907)271-5011	1689 C Street Anchorage, AK 99501	douglas_mutter@ios.doi.gov
For private landowners, contact the Alaska State Lands, Valdez Recorders Office	District Recorder	(907)835-3153	Box 2023 Valdez, AK 99686	

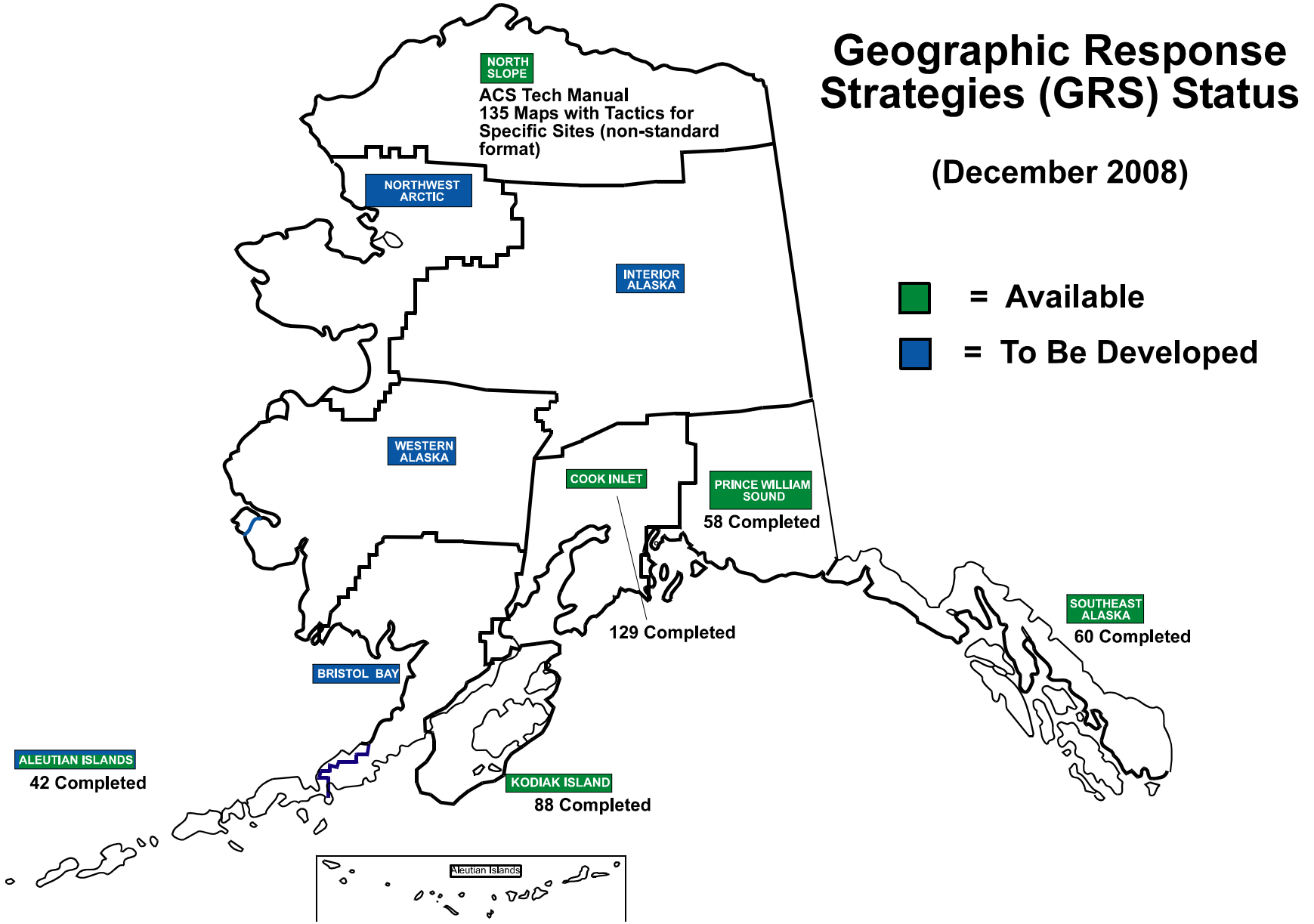
NOTE: In the final version of this document, the contact information will be included in Part One of the SCP and that part will be referenced in this section.

PPOR-01 Port Valdez Site Considerations

	A-01 West Sawmill Spit Anchorage	A-02 Anderson Bay Anchorage	A-03 Gold Creek Anchorage	D-04 Valdez City Dock	D-05 SERVS Dock	D-06 Valdez Container Terminal	D-07 Valdez Petroleum Terminal	D-08 Valdez Marine Terminal #1	D-09 Valdez Marine Terminal #3	D-10 Valdez Marine Terminal #4	D-11 Valdez Marine Terminal #5	M-12 SERVS Buoys
Human Health and Safety Considerations												
Communities – distances/population	Valdez- 3.5nm/ pop.4155	Valdez- 7nm/ pop.4155	Valdez- 2nm/ pop.4155	Valdez 0nm/ pop.4155								
Natural Resources Considerations												
Fish & Wildlife	Waterfowl, sea otter concentrations, spawning salmon, harbor seals, sea lions, bald eagle nests											
Threatened & Endangered Species	Steller's sea lion occur in Port Valdez, but there are no haul outs or rookeries there.											
Sensitive Areas	Valdez Narrows, Shoup Bay, Gold Creek, Mineral Creek, Valdez Boat Harbor, Robe and Lowe Rivers, Allison Creek, Sawmill and Salmon Creeks, Seven Mile Beach, Anderson Bay, Valdez Duck Flats											
Other Stakeholder Considerations												
Fisheries	Three fish processing plants, commercial seine of pink, chum, and coho salmon											
Mariculture	Solomon Gulch Hatchery: pink, chum, and silver salmon.											
Subsistence	Intertidal harvest activities											
Historic Property	The segment should be inspected by FOSC Historic Properties Specialist prior to or concurrent with operations.		Report cultural resources if discovered during operations to FOSC Historic Properties Specialist.									
Tourism/Recreation	High Recreational Use Area – cruise ships, excursion boats, fishing charters, independent sport fishing											
Waterfront Public Facilities/Parks	None noted			Valdez small boat harbor, City dock, container dock								
Waterfront Private Facilities	None noted			6 private RV parks								
Response and Salvage Resources Considerations												
Can Vessel Be Boomed?	Yes			Vessels can be boomed at the APSC and City docks.								
Geographic Response Strategies	PWS-NE-13 through PWS-NE-22											
Closest Alternative Place of Refuge	PPOR-01 D-08 Valdez Marine Terminal: 0.5nm	PPOR-01 A-01 West Sawmill Spit Anchorage: 4nm	PPOR-01 D-04 Valdez City Dock: 2nm	PPOR-01 A-03 Gold Creek Anchorage: 2nm								

NOTE: Sensitive resource information can be found on other maps which can be accessed through the sensitive area section of the PWS Sub-Area Contingency Plan: http://www.akrrt.org/PWSplan/PWStoc.shtml.

NUKA Research & Planning Group, LLC.


Geographic Response Strategies (GRS) Status
(December 2008)
= Available
= To Be Developed
NORTH SLOPE
ACS Tech Manual
135 Maps with Tactics for Specific Sites (non-standard format)
NORTHWEST ARCTIC
INTERIOR ALASKA
WESTERN ALASKA
COOK INLET
PRINCE WILLIAM SOUND
58 Completed
129 Completed
SOUTHEAST ALASKA
60 Completed
BRISTOL BAY
ALEUTIAN ISLANDS
42 Completed
KODIAK ISLAND
88 Completed
Aleutian Islands

Legend

Map & Photo

PWS NE-17 Valdez Duck Flats looking northwest.

PWS NE-17 Valdez Duck Flats looking north.

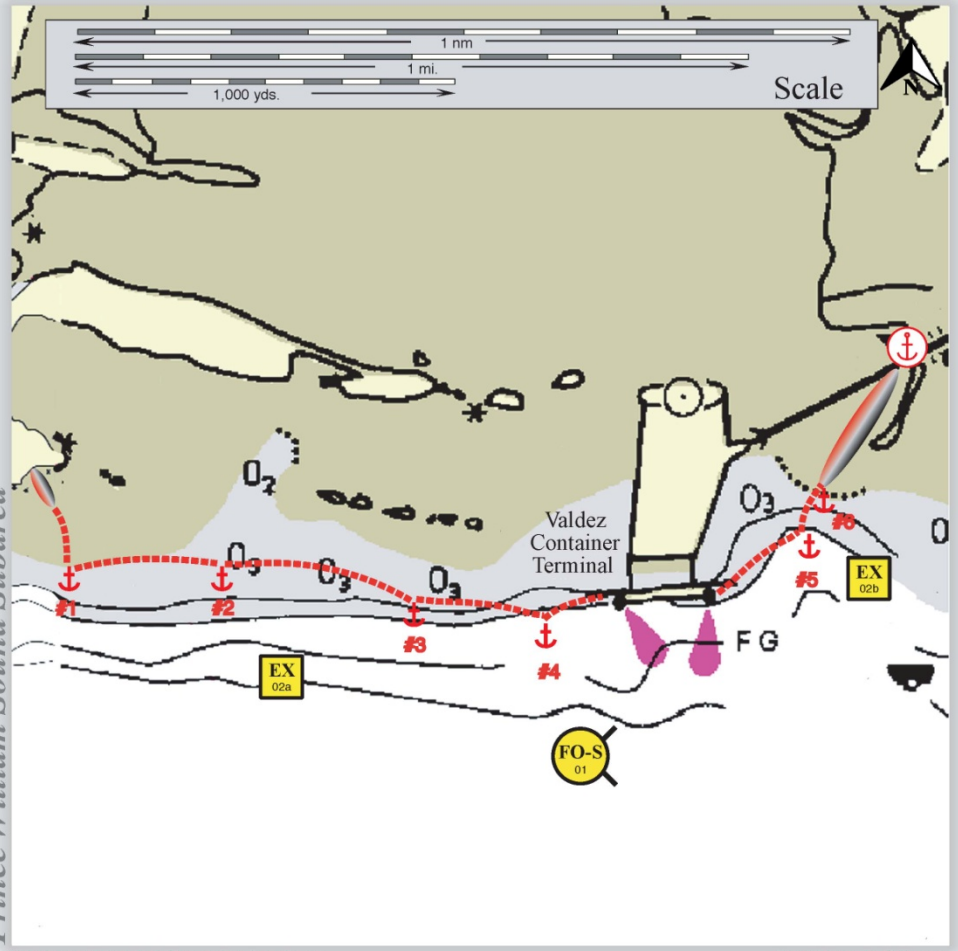
PWS NE-17 Valdez Container Terminal looking north.

- FO-S — Free-oil Containment and Recovery, Shallow Water
- EX — Exclusion Booming
- Protected-water Boom
- Tidal-seal Boom
- Anchor

Valdez Duck Flats, NE-17

Geographic Response Strategies for Prince William Sound Subarea

Center of map at 61˚ 07.3' N Lat., 146˚ 18.6' W Lon.



This is not intended for navigational use.

Soundings in fathoms

May 2005

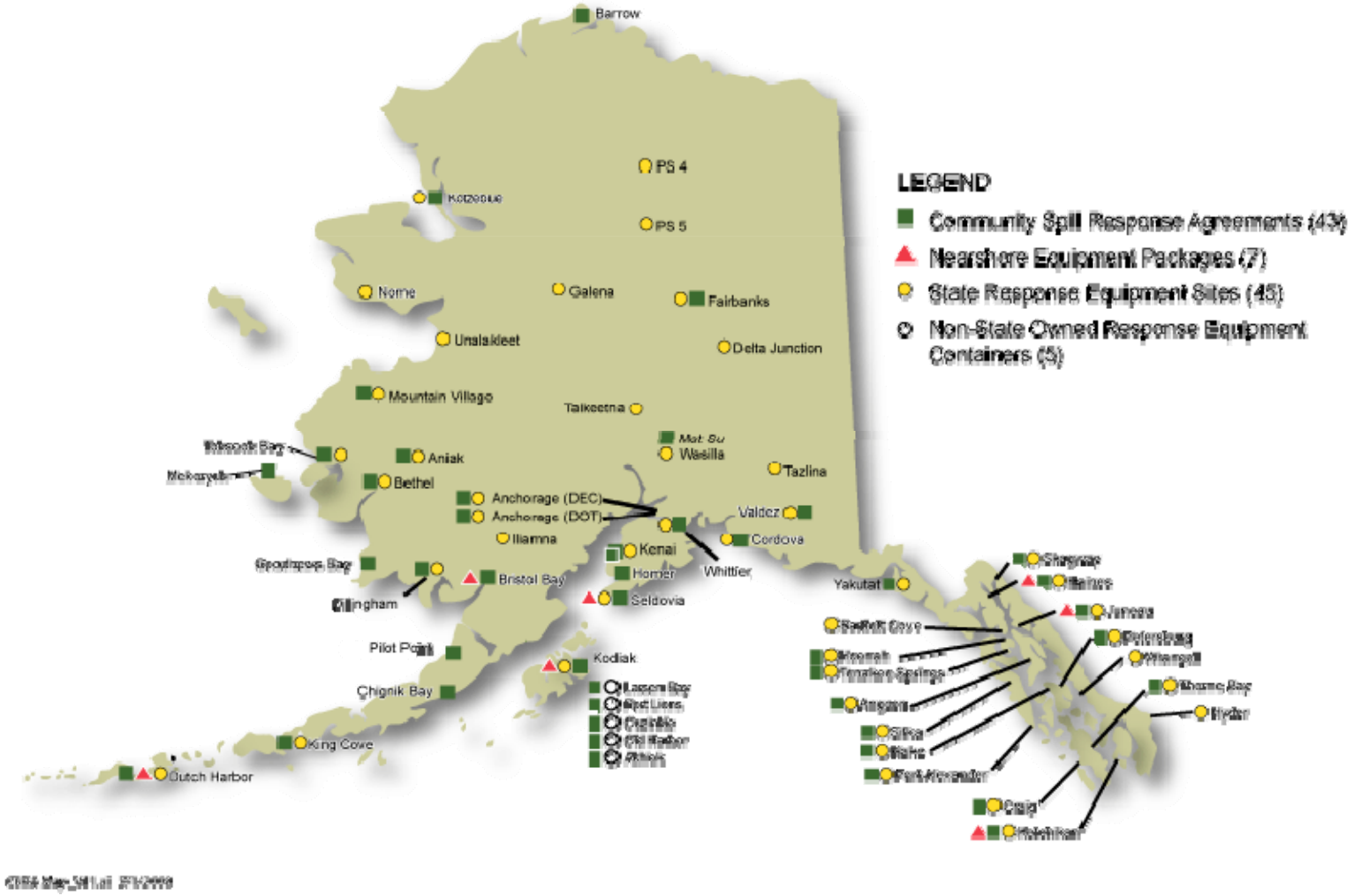
DRAFT This tactic map is a working draft being used to develop a Geographic Response Strategy at this location. The tactics represented here have not been approved by the Subarea Committee and should not be considered final. If you have questions or comments please contact us by email at contact@nukaresearch.com.

NUKA Research & Planning Group, LLC.

ID	Location and Description	Response Strategy	Implementation	Response Resources	Staging Area	Site Access	Resources Protected (months)	Special Considerations
NE-17-01 FO-S	Valdez Duck Flats Nearshore waters in the general area of: Lat. 61° 05.7 N Lon. 146° 18.0 W	Free-oil Recovery Maximize free-oil recovery in the offshore & nearshore environment of Valdez Duck Flats depending on spill location and trajectory.	Deploy free-oil recovery strike teams upwind and up current of Valdez Duck Flats. Use aerial surveillance to locate incoming slicks.	Deploy multiple free-oil recovery strike teams as required to maximize interception of oil before it impacts sensitive areas.	Valdez	Via marine waters Chart 16707-1	Same as NE-17-02	Vessel master should have local knowledge. Use extreme caution, shoal waters with numerous reefs and rocks.
NE-17-02 EX	Valdez Duck Flats Identified Anchor Points 1. Lat. 61° 07.409 N Lon. 146° 20.084 W 2. Lat. 61° 07.324 N Lon. 146° 19.667 W 3. Lat. 61° 07.304 N Lon. 146° 19.253 W 4. Lat. 61° 07.314 N Lon. 146° 18.846 W 5. Lat. 61° 07.373 N Lon.146° 18.094 W 6. Lat. 61° 07.456 N Lon.146° 18.025 W	Exclusion Exclude oil from impacting the intertidal area around the Valdez Duck Flats.	Deploy anchors and boom using skiffs with jet drives (class 6). Use the pre-identified anchor points in both arrays. Deploy array (a) first beginning at the west end of the Container Dock using two 2300 ft. segments of protected-water boom and 250 ft. of tidal-seal boom. For array (b), place 1200ft. tidal-seal on the east leg attaching to a pre-positioned polyline on causeway. Complete the array with 1400 ft. of protected-water boom attached to a pre-positioned tide-slide connector on the east side of the Container Dock. Boom lengths: a. 2600 ft. protected-water boom 250 ft. tidal-seal boom b. 1200 ft. tidal-seal boom 1400 ft. protected-water boom	Deployment Equipment 4000 ft. protected-water boom 1650 ft. tidal-seal boom Vessels 2 ea. class 6 Personnel/Shift 4 ea. vessel crew Tending Vessels 1 ea. class 6 Personnel/Shift 2 ea. vessel crew	SERVS Dock/Valdez (equipment pre-positioned in the connex on the SERVS Dock 10/2004)	Via marine waters Chart 16707-1	Birds-waterfowl concentration Habitat- marsh, sheltered tidal flats Human use-sport fishing(May–Sept.)	Vessel master should have local knowledge. REPORT any cultural resources found during operations to FOSC Historic Properties Specialist. Adapted from the SERVS Valdez Duck Flats Protection Plan. Deployed: 2004 SERVS

Map of Community Spill Response Agreements, Response Equipment Containers, and Nearshore Equipment Packages in Alaska

as of July 1, 2009



STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game
Division of Habitat

PROJECT TITLE: ADF&G Special Area Notebook

PROJECT CONTACT

Mark Fink, Special Areas Planning Coordinator
Alaska Department of Fish and Game, Division of Habitat
333 Raspberry Road, Anchorage, Alaska 99518
Telephone: 907-267-2338
Fax: 907-267-2499
Email: mark.fink@alaska.gov

PROJECT LOCATION

This project is a desktop exercise that will occur in the Alaska Department of Fish and Game (ADF&G) regional office in Anchorage, where the statewide Special Areas Planning Coordinator and experienced cartographers are located. The project includes all 32 legislatively-designated special areas statewide. Twenty four of the 32 ADF&G refuges, sanctuaries, and critical habitat areas are located in six of the eight political subdivisions currently eligible for CIAP participation. These areas are within or adjacent to the Cook Inlet Areawide Lease Sale, the Alaska Peninsula Areawide Lease Sale, and the federal Outer Continental Shelf Oil and Gas Leasing Program. Of the remaining eight special areas, four are located in or near shipping lanes in the Gulf of Alaska and Southeastern Alaska, two are located in the Alaska Coastal Zone but away from coastal waters, and two are located in Interior Alaska. A map is attached to this proposal.

PROJECT DURATION

The project is expected to require one year to complete.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$ 36,200	$ 36,200	0	0	0

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
36,200	0	0	36,200	0

PROJECT DESCRIPTION

This project would produce a Special Areas Notebook that would provide consolidated information on the legislatively-designated Special Areas in order to improve the protection of these Special Areas.

The Alaska State Legislature has classified certain areas as being essential to the protection of fish and wildlife habitat. These areas are designated as a refuge, critical habitat area, or sanctuary and are collectively known as Special Areas. Certain Special Areas also have management plans in place, and planning efforts for other areas are on-going. Management plans guide day-to-day and long-term decision making in many Special Areas; the Goals and Policies of these management plans are adopted as state regulation and provide additional area-specific direction for land and water use activities.

At this time, the State of Alaska has no single, complete source of current boundary and purpose information for ADF&G Special Areas. The 1991 publication ***State of Alaska Refuges, Critical Habitat Areas, and Sanctuaries***, a compilation of Special Area maps, statutes, and other information prepared by Habitat Division is outdated. The publication contains errors in the original text and does not include unit-specific regulations and management plans for all special areas. Further, the resource inventory and boundary information was produced with outdated technology. Converting these data to GIS format will modernize the information and provide more accessibility and usability of the data.

The department proposes to improve the 1991 publication ***State of Alaska Refuges, Critical Habitat Areas, and Sanctuaries***. The revised and updated compilation would include boundary maps that depict the boundaries described by current Alaska Statutes for each of the 32 Special Areas. The project would also correct errors in the original text and expand the compilation to include information about unit-specific regulations and management plans. With this funding, ADF&G cartographers and habitat biologists would convert existing refuge, sanctuary, and critical habitat area boundary maps to GIS format; proof maps for corrections; revise maps for final printing; prepare updated text; and coordinate with a commercial printing service for production of paper pages for this new edition of the Special Areas notebook. In addition to 500 paper copies, the completed information would be available to department Internet coordinators for posting on the ADF&G website.

The updated boundary maps will improve our knowledge of outstanding fish and wildlife habitats managed by the state of Alaska; and provide accurate land status information to assist developing strategies to mitigate potential effects of oil and gas development on these resources.

The proposed project would educate the public, including permit applicants, local governments, and state and federal agencies, about the locations and purposes of ADF&G legislatively-designated special areas, and make current boundary information easily available to potential oil and gas developers and other agencies evaluating potential future development. The project does not require interagency or public collaboration to complete, however the completed project will facilitate future collaboration with agency and public entities interested in the location, purpose, and management of ADF&G Special Areas.

MEASUREABLE GOALS AND OBJECTIVES

The project would create a stand alone compilation of current special area statutes and boundary maps. The measureable outcomes of the project are: a) updated boundary maps and corrected narratives; b) publication of 500 copies of the improved reference notebook; and c) distribution of the copies.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with multiple CIAP authorized uses; the strongest connection is with CIAP Authorized Use #1 – *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* Special areas management is guided by the enabling legislations, the purposes of the area, and the special area management plan. This information identifies allowable activities within the special area and provides a basis for the protection of these unique resources. The proposed project would consolidate and update information regarding these special areas.

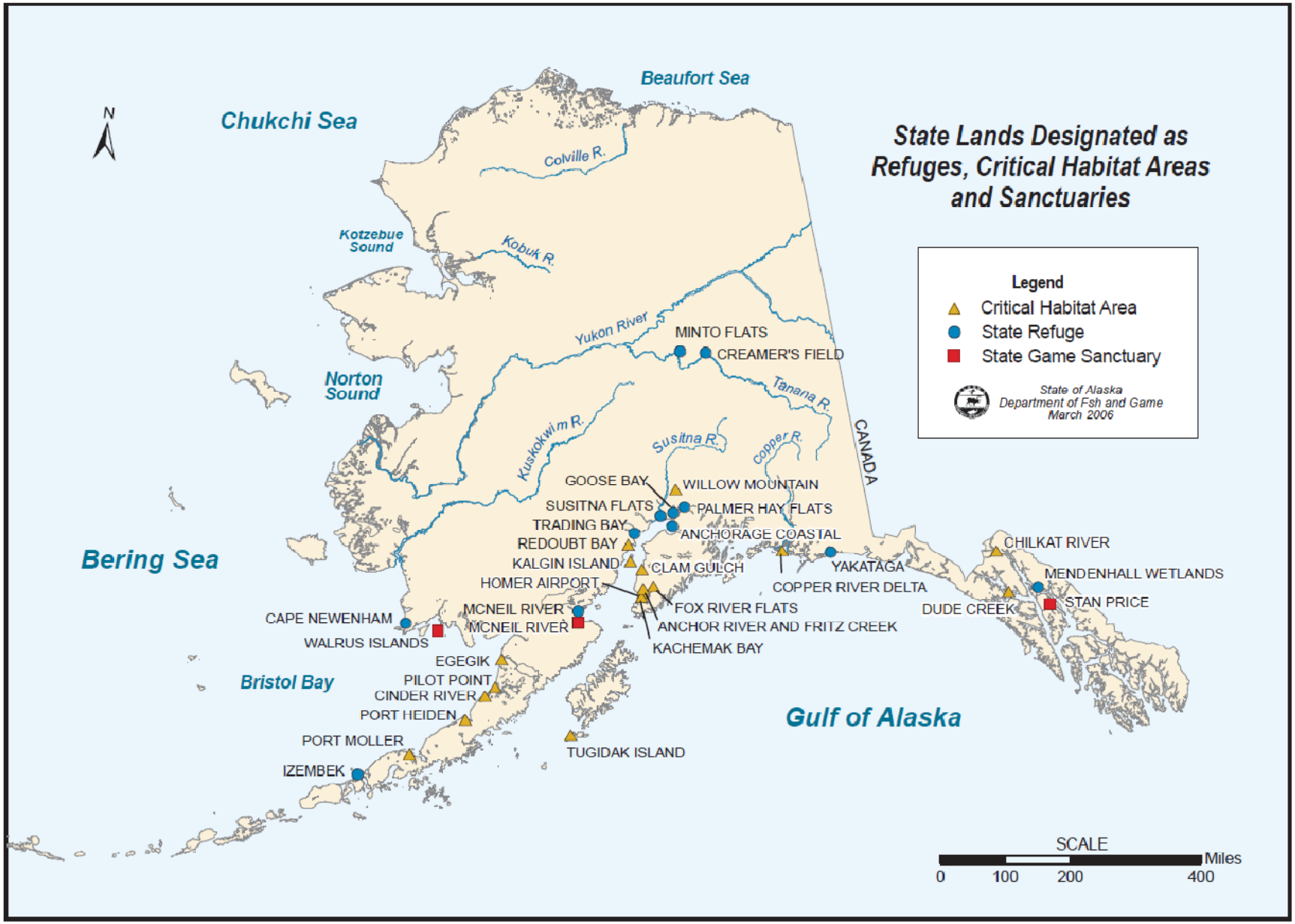
The Special Area Notebook will be made available to the public, including permit applicants, local governments, and state and federal agencies. It will educate these entities about the locations and purposes of ADF&G legislatively-designated special areas, and make current boundary information easily available to potential oil and gas developers and state agencies evaluating potential future development. This information will improve ADF&G's ability to efficiently protect the coastal areas within the Special Areas.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The project concerns only state owned and state managed lands and waters. While no coordination with federal resources or programs is necessary, the completed project would be a tool to educate federal agencies about the locations and purposes of ADF&G legislatively-designated special areas. We anticipate the completed project will facilitate future collaboration with federal program staff interested in the location, purpose, and management of ADF&G Special Areas.

COST SHARING OR MATCHING OF FUNDS

The department will not use these CIAP funds for cost sharing or matching purposes.


State Lands Designated as Refuges, Critical Habitat Areas and Sanctuaries
N
Beaufort Sea
Chukchi Sea
Bering Sea
Bristol Bay
Gulf of Alaska
Colville R.
Kotzebue Sound
Kobuk R.
Yukon River
Norton Sound
Kuskokwim R.
Susitna R.
Copper R.
Tanana R.
CANADA
MINTO FLATS
CREAMER'S FIELD
Legend
Critical Habitat Area
State Refuge
State Game Sanctuary
State of Alaska
Department of Fish and Game
March 2006
GOOSE BAY
WILLOW MOUNTAIN
SUSITNA FLATS
PALMER HAY FLATS
TRADING BAY
ANCHORAGE COASTAL
REDOUBT BAY
KALGIN ISLAND
CLAM GULCH
YAKATAGA
HOMER AIRPORT
COPPER RIVER DELTA
CHILKAT RIVER
MENDENHALL WETLANDS
STAN PRICE
DUDE CREEK
FOX RIVER FLATS
MCNEIL RIVER
MCNEIL RIVER
CAPE NEWENHAM
WALRUS ISLANDS
ANCHOR RIVER AND FRITZ CREEK
KACHEMAK BAY
EGEGIK
PILOT POINT
CINDER RIVER
PORT HEIDEN
PORT MOLLER
IZEMBEK
TUGIDAK ISLAND
SCALE
Miles
0
100
200
400

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game, Division of Habitat

PROJECT TITLE: Kuk River and Kugrua River Stream Surveys - Baseline Fish Data Collection

PROJECT CONTACT

Contact Name: William Morris
Address: ADF&G, Division of Habitat, 1300 College Road, Fairbanks, AK 99701
Telephone Number: (907) 459-7282
Fax Number: (907) 459-7303
Email Address: william.morris@alaska.gov

PROJECT LOCATION

Fish sampling sites will be established at multiple sites within the Kuk and Kugrua river systems including habitats in the lower portions of the rivers and upstream to the extent accessible by boat and several tributaries of each river. (See attached map) All sampling in the Kugrua will be within the coastal zone and most sampling in the Kuk River (approximately 85% or greater) will be within the coastal zone. Sampling on the Kuk River that occurs outside the coastal zone will be in the main channel of the Kuk. All fish using reaches of the Kuk River outside the coastal zone are reliant on the coastal zone for access and likely for portions of their life history. All fish and sampling conducted outside the coastal zone are directly associated with productivity within the portion of the Kuk that is within the coastal zone (the majority of the sampling area). Fish sampled above the coastal zone are a component of the fisheries populations that local residents of Wainwright depend upon for subsistence. The map indicates a much larger area because we will radio track any tagged regardless of where they travel in the systems... Additionally, flights to identify any salmon spawning will cover entire drainages.

Radiotracking of tagged fish could include other rivers within the region.

PROJECT DURATION

Project duration is proposed to be four years. Fish sampling will occur during years 1, 2 at one of the rivers and during year 3 and 4 at the other river. It has not yet been determined which river will be sampled first.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
1,104,700	344,650	243,400	256,150	260,500

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
1,104,700	0	0	1,104,700	0

PROJECT DESCRIPTION

The Kuk and Kugrua rivers represent major data gaps with respect to our understanding of fish use of large sized North Slope drainages. These rivers are two of the larger flowing into the Chukchi Sea on the North Slope of Alaska yet systematic sampling of the drainages has not been conducted to any level adequate to make fish or fish habitat management determinations or even an evaluation as to their significance to fish. The rivers are both likely to be crossed by pipelines connecting any Chukchi development to the Trans-Alaska Pipeline System (TAPS) and both are in the area identified for placement of any OCS related onshore facilities. Additionally, both systems have extensive estuarine lagoon type habitats that could be impacted directly in the case of a product spill that reaches the coast. The Kuk River is a large uncataloged (not listed in the Anadromous Waters Catalog, the basis of State of Alaska fish habit permitting under AS16.05.871) system likely harboring anadromous whitefishes and salmon as well as resident fish species. The Kugrua River appears to support adequate enough numbers of Chinook salmon that local subsistence users target the species within the drainage, although salmon spawning and rearing habitat appear to be minimal. The Kugrua has not been cataloged or sampled and could be crossed by a pipeline from the Chukchi to TAPS. Fish sampling using, fyke nets, seines, gill nets, minnow traps and angling would be conducted at least twice per open-water season, at multiple locations (minimum of two) in two years for each drainage (i.e. Year 1 and 2 = Kugrua River, Year 3 and 4 = Kuk River). Sampling duration would be approximately 7 to 10 days per sampling period. Basic fish data would be collected including age/weight relationships, sampled population size and age structure and age at maturity data for non salmon species encountered in large enough numbers to produce reliable data. If sampling in the first year of research indicates that it is appropriate to do so, the second year of sampling may be cancelled and effort shifted to the other river. Additionally, depending on catches during year 1 of sampling at either river, a small radio telemetry component may be added to help more accurately delineate seasonal habitat use of fish in the rivers. All data will be collected using easily repeatable methods such that all metrics are easily comparable to future data collection.

Aerial surveys will be conducted to help identify adult salmon moving into the rivers and to locate spawning areas; radio tracking of any tagged fish would also occur during these flights. If significant numbers of salmon are observed efforts will be made to capture salmon with gill or seine nets to collect genetic samples. Aerial counts will be conducted if conditions are appropriate.

Basic water quality data (D.O., specific conductance, pH and water temperature) will be collected daily at all sample sites Chlorophyll a and qualitative aquatic invertebrate samples will be part of the data collection at all sample sites during each sampling period. These data will provide a baseline data set for these metrics. Invertebrate samples may be preserved and stored for future detailed analysis.

Species specific data will provide an excellent baseline for future impact analyses as all basic indicators of fish population structure including growth, age/size structure of the population will be measured and can directly be compared with future population data in the drainages.
These studies will collect and synthesize population structure level data using easily repeatable methodologies, hence providing an excellent dataset for future comparisons.

- Basic fish use, fish life history and population structure data are lacking for the proposed study rivers. Although, local knowledge indicates that the Kugrua River has large enough numbers of Chinook salmon in the fall that people travel to the river from barrow to target them. The rivers would be the first potentially impacted by any OCS development that leads to product transportation via a pipeline to the existing oil fields or TAPS. The rivers are also in the area identified for placement of any OCS related onshore facilities. Additionally, both systems have extensive estuarine lagoon type habitats that could be impacted directly in the case of a product spill that reaches the coast. This research will directly address this information gap and provide the necessary data to appropriately protect important fish habitats by identifying fish species using various habitats throughout each river during the open water season. The radio telemetry portion of this study will be particularly useful in identifying the timing of seasonal movements and indentifying habitats used during different seasons. Multi-species population structure data from each area sampled will provide baseline population metrics for all future comparisons.
- This study will provide a data set amenable to direct comparison to future data collected regarding environmental or industrial stressor effects on area fish populations. The work will be directly relevant to State, Local and Federal agencies for analyzing and reviewing development proposals for the region. Data will be such that it can be directly applied to management decisions related to fish and fish habitat management. Data will be provided to industry in a timely manner allowing industrial entities to use these data to aid in design and routing of development infrastructure to minimize or avoid impacts to subsistence fish species and their habitat. The Bureau of Land Management, Arctic Team, and North Slope Borough Wildlife Department will be cooperators in this work. This project will provide the necessary data to make assessments of future risks to fish and or damage to their habitats.
- This project is strongly based on cooperative partnerships with local entities and Federal agencies. Annual meetings will be held to address specifics of previous year's work and to outline the upcoming year's work. Past performance of similar studies in other areas has been excellent and community support has been consistent. Based on results and acceptance of results from our previous work on the North Slope, there is high likelihood of data being successfully used to mitigate impacts from oil and gas exploration and development, as has been the case with previous work. Data will provide a baseline data set, following established procedures. The rivers within this study area are used by subsistence fishers from Barrow and Wainwright and are likely to be the first encountered during any OCS oil and gas related onshore activities.
- Much of this work is directly tailored to meet the stated needs of local North Slope entities representing subsistence users from across the North Slope. Data will be directly relevant to North Slope communities by providing data required for proper fish resource management. Benefits will be long lasting because methods used and metrics obtained will be easily repeatable making future assessments of area fish populations straight

forward and directly comparable. Broader applicability of results to other portions of the state largely would be restricted to aquatic system comparisons on the North Slope whereby it is possible that inferences from study streams could be made for other similar streams not in the study.

- All results from this study will be transmitted in interim and Technical Reports to State, Federal and North Slope Borough agencies as well as to the funding agency. Additionally, we will transmit data to local communities via presentations at various meetings such as Subsistence Oversight Panel, Fish and Game Advisory and Regional Advisory Council meetings. All nominations to the Anadromous Waters Catalog will be available to all entities including the public and resource managers.

MEASUREABLE GOALS AND OBJECTIVES

The number of sample sites will be determined on site. The plan is to sample multiple main channel sites and to sample all significant tributaries to each main river. Sample sites could go anywhere from 4 to 10 discrete sites. Consultation with residents of Wainwright and the North Slope Borough as well as initial sampling will determine the final number of sites sampled.

An ADF&G, Division of Habitat, Technical Report will be completed after each river has been sampled for the prescribed two years. The report will summarize all data collected. Additionally, an interim report will be produced and submitted after the first year of sampling of each river to transmit that year's data. Production and submittal of interim and final Technical Reports will fulfill our goal of ensuring that information collected will be available to resource managers, industry and the public in a timely manner. Additionally, fish distribution data collected will be prepared and submitted for inclusion in the Anadromous Waters Catalog and the Fish Distribution Database. Nominations to the catalog will occur annually as fish data are synthesized.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

The project addresses CIAP Authorized Use 1- *projects and activities for the conservation, protection, or restoration of coastal area, including wetlands.* This project will provide the necessary data to make assessments of future potential risks to fish and or damage to their habitats from oil and gas development activities or natural stressors and will provide the necessary data to develop measures to ensure the protection of coastal areas and mitigate impacts to fish from oil and gas development. Currently these data are lacking in the proposed study area. The work will be directly relevant to State, Local and Federal agencies for analyzing and reviewing development proposals for the region. Data will be such that they can be directly applied to management decisions related to fish and fish habitat management and oil and gas development by providing fish species habitat use and seasonal patterns of habitat use data that are currently not available for these rivers. We will identify fish species using the rivers, establish population structure baseline data for those species, and potentially identify key habitats for spawning and wintering, two of the most critical habitat types for fish in the Arctic and also the most susceptible to perturbation through development activities. Proper protection of these subsistence resources can be accomplished provided we possess the types of data proposed for this project. These data can be used to protect fish and fish habitats during development of the area through incorporation in oil field development design and permitting.

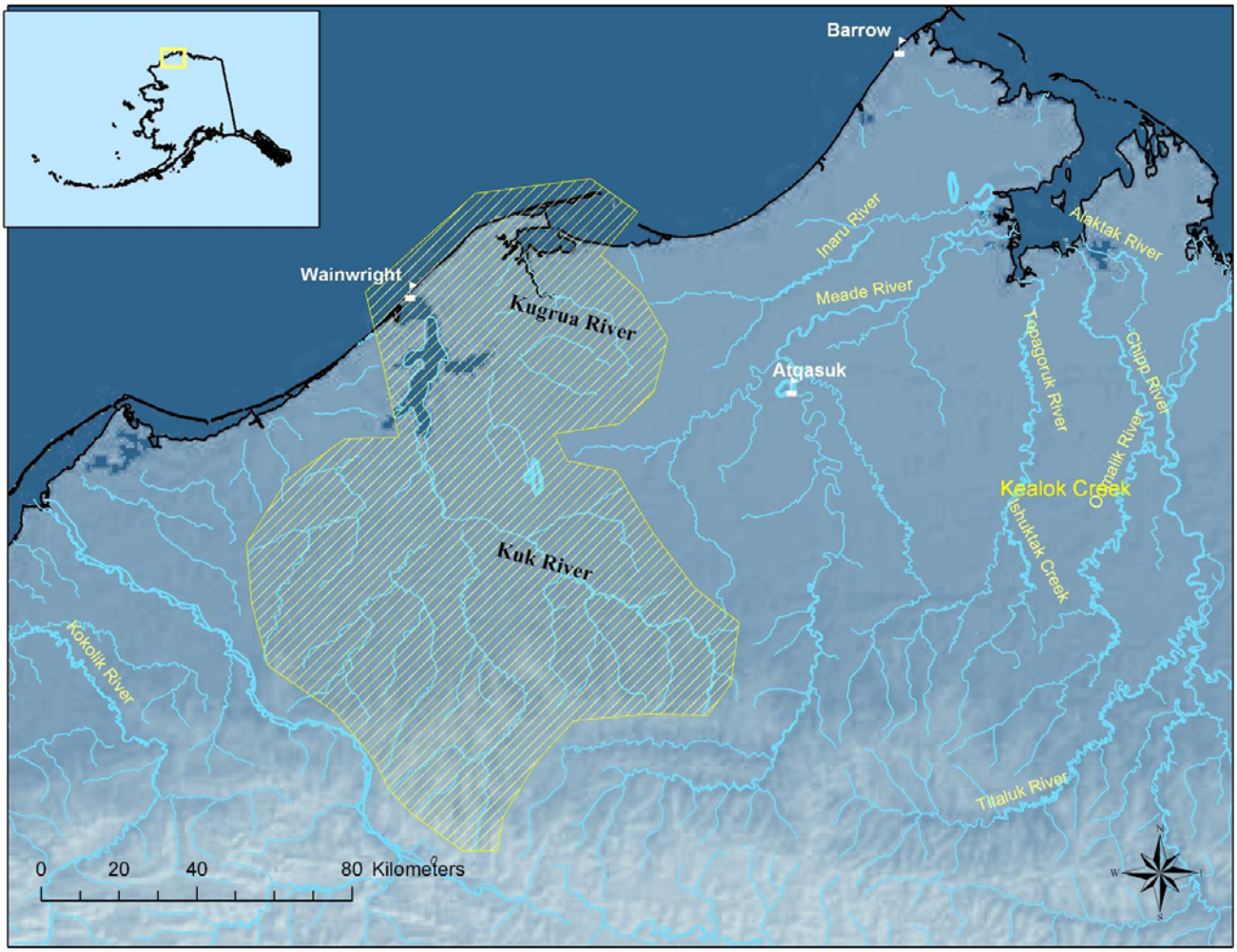
Additionally, with an appropriate level of knowledge of the fish resources in the rivers appropriate mitigation measures can be crafted and implemented.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The North Slope Borough Department of Wildlife Management (DWM) and the Division of Habitat have been involved in similar collaborative research on the North Slope since 2001. This study is largely a continuation of the same type of research into new areas used by subsistence harvesters and leased for oil and gas exploration. The North Slope Borough DWM has indicated their support of this project (letter attached). Similarly, the Bureau of Land Management, Arctic Team has also been involved with these efforts and will continue to be involved as the project moves into new areas (letter of support attached). ConocoPhillips Alaska, Inc., has also indicated their strong support of this proposed project (letter attached). We have also consulted with the United States Fish and Wildlife Service and they have indicated that this type of work is invaluable to fish resource management and they have indicated their support for this project and have further indicated their interest in partnering opportunities (letter attached).

COST SHARING OR MATCHING OF FUNDS

We do not intend to use CIAP funds for cost sharing or matching.



Map 1. Project sampling/study area. Fish sampling would be conducted in several locations within the Kuk River and Kugrua River drainages within the yellow cross-hatched area depicted on the map. Aerial surveys flown to relocate radio tagged fish could extend outside the area depicted.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Arctic Field Office
1150 University Avenue
Fairbanks, Alaska 99709-3844
http://www.blm.gov/ak

TAKE PRIDE IN AMERICA

Bill Morris, Habitat Biologist
Division of Habitat
Alaska Department of Fish & Game
1300 College Rd Fairbanks, AK 99701-1599

Dear Mr. Morris:

The BLM Arctic Field Office is pleased to write this letter of support for your proposed project entitled *Kuk River and Kugrua River Stream Surveys - Baseline Fish Data Collection,* submitted for funding to the Coastal Impact Assistance Program by the Alaska Department of Fish and Game, Division of Habitat. One of the challenges that we face in managing oil and gas exploration and development in the National Petroleum Reserve-Alaska (NPR-A) is the lack of current and relevant fish distribution data for river systems both in and adjacent to the reserve. This project would provide much needed information that would be used by the BLM in future land use planning, permitting, and environmental reviews, furthering our ability to responsibly develop oil and gas resources in the NPR-A.

The Division of Habitat has a proven track record of disseminating information on a timely basis through their Technical Report Series. Their past research is used extensively by the BLM to analyze potential impacts to fish populations and fish habitat from proposed oil and gas activities and to develop protective measures to mitigate these impacts. Many stream and river systems in the NPR-A have never been sampled for fish and many others have not been sampled within the last 25 years. The new information that would result from this proposed project will be immediately useful and will establish the knowledge base for management decisions well into the future. Ultimately, it will provide data that will help advance the environmental management goals of both the State and Federal governments in Alaska.

Sincerely,

Dave Yokel, acting

Lon Kelly, Manager
Arctic Field Office

J. Stephen de Albuquerque
Director - Health, Safety & Environment
Permits & Sciences

P.O. Box 100360
Anchorage, AK 99510-0360
Phone 907.263.4889
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J.s.deAlbuquerque@conocophillips.com

ConocoPhillips Alaska, Inc.

January 29, 2009

Mr. William Morris
Division of Habitat
Alaska Dept. of Fish and Game
1300 College Road
Fairbanks, AK 99701

Re: Fish Research Proposals for Coastal Impact Assessment Program Funding

Dear Mr. Morris:

ConocoPhillips Alaska, Inc. is pleased to provide this letter of support for your four proposals to the Alaska Department of Natural Resources concerning North Slope fisheries research for funding under the Coastal Impact Assessment Program. These proposals are titled:

- **Subsistence Fish Surveys and Life History Research – Chipp/Ikpikpuk, Topagoruk, Meade and Inaru river drainages**
- **Central Beaufort Sea Broad Whitefish Research**
- **Kuk River and Kugrua River Stream Surveys - Baseline Fish Data Collection**
- **Anadromous Stream Surveys - Baseline Fish Data Collection**

These studies will provide a high level of fish and habitat data for proper management of riverine fish habitat related to future North Slope development. Data collected will be directly relevant to State and Federal permit reviews and permit issuance for any oil and gas exploration and development proposed for the areas. The lack of fish data for these rivers and their apparent significant use by fish coupled with the high likelihood of future development activities within the drainages make this research a priority. Any pipeline constructed between Alaska's Northwest coast and the Trans-Alaska Pipeline System (TAPS) would cross many of these rivers and potentially impact the systems through construction and maintenance activities. The projects will provide the necessary information to help guide construction methods and routing to minimize impacts to fish and their habitats.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
Voice (907) 456-0272
FAX (907) 456-0454
Deborah_Rocque@fws.gov

in reply refer to:
FFWFO CIAP

January 27, 2009

Bill Morris
Division of Habitat
Alaska Department of Fish & Game
1300 College Road
Fairbanks, AK 99701-1599

Mr. Morris:

The U.S. Fish and Wildlife Service, Fairbanks Fish and Wildlife Field Office (FFWFO) supports your proposed projects that were submitted for funding to the Coastal Impact Assistance Program: 1) "Kuk River and Kugrua River Stream Surveys - Baseline Fish Data Collection"; 2) "Anadromous Stream Surveys - Baseline Fish Data Collection"; 3) "Central Beaufort Sea Broad Whitefish Research"; and 4) "Subsistence Fish Surveys and Life History Research - Chipp/Ikpikpuk, Topagoruk, Meade, and Inaru River Drainages". FFWFO agrees that current information about the life histories and distributions of fish on the North Slope will be invaluable for future management of these resources. We look forward to opportunities to partner with the Division of Habitat on these and other investigations in northern Alaska.

Please contact Jeff Adams at 456-0218 or Jeff_Adams@fws.gov for any information you may need.

Thank you for your attention.

Deb Rocque
Field Supervisor

NORTH SLOPE BOROUGH
Department of Wildlife Management
P.O. Box 69
Barrow, Alaska 99723

Phone: Central Office (907) 852-2611 ext. 350
or: (907) 852-0350
FAX: (907) 852 0351
Arctic Research Facility: (907) 852-0352

January 27, 2009

Bill Morris
Division of Habitat
Alaska Dept. of Fish and Game
1300 College Road
Fairbanks, AK 99701

Dear Mr. Morris,

The Department of Wildlife Management supports your proposed baseline Fish research projects submitted for funding to the Coastal Impact Assistance Program. As you know, the Native people of the North Slope depend heavily on fish resources of the Arctic and particularly within the National Petroleum Reserve-Alaska (NPR-A). While recent studies have provided vital information, there remains a lack of basic fish life history and distribution data for much of the Reserve and adjacent areas. More information is needed for proper planning and management of our freshwater fish resources as oil and gas interests expand into these regions.

As you also know, our Department has worked well with the Alaska Department of Fish and Game Division of Habitat which has resulted in a number of excellent publications. These proposals are essentially a continuation of collaborative work that has been underway for over 20 years. Your Division has also shown great respect for the local fisherman of the North Slope which has helped to make this work successful.

Regards,

J. Craig George
Wildlife Biologist

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Department of Natural Resources, Office of Project Management & Permitting

PROJECT TITLE: Imagery Basemap and Elevation Model for Alaska Coastal Districts

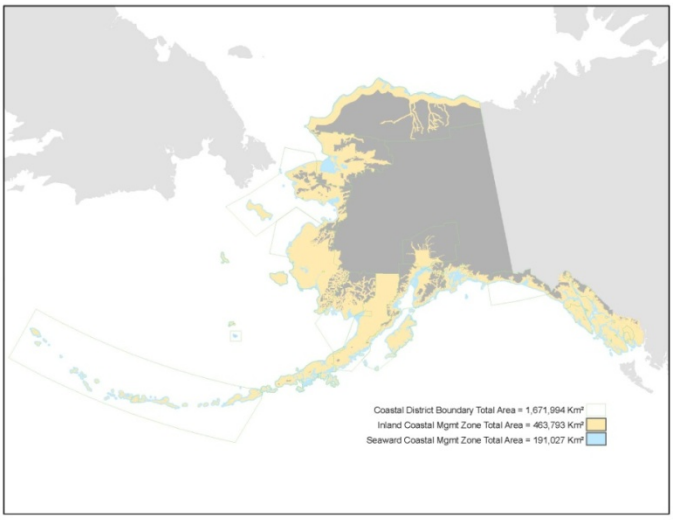
PROJECT CONTACT

Contact Name: Ed Fogels, Director, Office of Project Management and Permitting; DNR Executive Team Member of the Statewide Digital Mapping Initiative (SDMI)
Address: Atwood Building, 550 W. 7th Avenue, Anchorage, AK 99501
Telephone Number: (907) 269-8423
E-mail Address: Ed.Fogels@alaska.gov

PROJECT LOCATION

All lands within coastal districts and the designated coastal zone.

Figure 1: Minimum Scope of Proposal, Combined Yellow and Blue Areas



PROJECT DURATION

The project will be completed in three years.

ESTIMATED COST

The estimated cost to CIAP is $2,590,000.

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$2,590,000.	$1,130,000.	$730,000	$730,000	

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
2,590,000	0	0	2,590,000	0

PROJECT DESCRIPTION

This project will produce a common basemap and information service for all lands within coastal districts and the designated coastal zone. The basemap consists of three primary products: ortho-rectified imagery, updated digital elevation model (DEM), and the ability to overlay current permits, land authorizations, hazards, ShoreZone oblique photography, and other mapped themes. The project maps all lands within Coastal Districts and Coastal Zones. Detailed basemaps are essential for informed decision making. The project aligns with the goals of the Statewide Digital Mapping Initiative of which the Dept. of Natural Resources, the Dept. of Military and Veteran Affairs, and the University of Alaska are co-sponsors.

Managers of coastal lands and resources require current and reliable information for accurate and timely decision making regarding development projects and monitoring requirements. This project will allow managers to make decisions, respond to events, and work to the benefit of the coastal environment using enhanced geospatial information that is much improved over what is currently available.

Existing topographic basemaps of Alaska are more than 40 years old, inaccuracies are common, current aerial photographs or other imagery are generally not available, and elevation models are too coarse for most useful applications, including the production of ortho-images. New technologies have significantly lowered the cost of producing the proposed map series.

Existing, proven infrastructure with thousands of users will get the data to land managers, scientists and engineers, and the public. Outreach for the data will include a project website, integration into existing DNR and University websites, and promotion through ongoing, existing training and outreach programs. Training sessions will be delivered in hub communities.

Coordination with State or Local Entities

Through the SDMI planning process, over 150 detailed user surveys were completed. Community requirements for high resolution imagery with an ability to provide updates within a one to three year period were documented. Detailed inventories of vendor archives for Alaska are compiled, and an imagery workshop was held March 2-3, 2009. The 2008 SDMI DEM workshop provided public input and guidance on sources, costs, and alternatives for elevation modeling. The March 2009 Ortho-Imagery Workshop provided input on technologies and costs for broad scale mapping. Whitepapers for both workshops are available at http://alaskamapped.org .

MEASUREABLE GOALS AND OBJECTIVES

Ortho-Rectified Images: This project delivers current images of the Inland Alaska Coastal Management Zone and extending a few hundred meters offshore. The images will be of sufficient detail to view buildings, roads, summer trails, wetlands and to support accurate land cover– habitat descriptions. The project can provide updated imagery for sites that require public monitoring and change detection. Basemaps will be publicly accessible through proven Internet delivery systems.

Digital Elevation Model: Deliver a product that is at least twice the resolution and accuracy of the current USGS topographic model for the coastal areas. The DEM will be used to produce ortho-imagery and to model elevation for each coastal district.

Permit Overlay Function: Deliver an interactive mapping and query system that allows users to select the theme they would like to overlay onto the basemap or generate reports from a shared database. Existing permits, land ownership, native allotments, anadromous streams, nest sites, haul-out areas, nautical charts, and Shorezone are all examples of the type of options that are available to users. This component is being developed at DNR and can be customized for coastal district managers and CIAP sponsors for relatively low cost.

Methods

Ortho-rectified images: This portion consists of a one-time data purchase for the project area with a three year capability to provide coastal monitoring. The University of Alaska, Geographic Information Network of Alaska, will lead this effort. This solution provides a view of current conditions for the entire Alaska coastal area and provides a baseline from which to assess future changes. It supports backward looking comparisons with 1950's USGS and 1970/80's NASA/USGS air photography. It is complemented by an environmental monitoring strategy. The new basemap would be updated to monitor areas of special interest for a minimum of three years. For example, coastal development projects, high erosion sites, or special project areas could be monitored quarterly or annually. Areas of especially high or immediate interest, such as coastal areas subject to oil spill response or strong storm or tsunami, could be imaged immediately following an event.

The one-time data purchase would be acquired from new collection over two years filling any void areas from recent archives. To control costs, existing high resolution agency data that is acceptable may be incorporated. Once complete coverage is achieved and a final product processed and delivered, the initial data acquisition component would be complete. Monitoring, refresh, and emergency response capability and would be implemented either by installing vendor equipment for local reception of satellite data or through a service level agreement with a vendor. In the case of a service level agreement, the purchase agreement would commit the vendor to delivering a minimum quantity of cloud free coastal imagery and special interest area dedicated tasking every year. The costs would be shared with the Statewide Digital Mapping Initiative to assure the reception equipment or service level agreement had the capacity to capture coastal and interior areas.

Digital Elevation Model: The DEM currently available to the project is the USGS National Elevation Dataset. It has a coarse resolution, highly variable accuracy, and is widely considered unsuited for production of ortho-imagery. This project will assemble a new DEM for the coastal areas. A new, free, and global DEM data set was recently released (June 2009) that is about twice the resolution and accuracy of the current Alaska model. The new elevation model will be tested and processed to meet the requirements for ortho-imagery production and to support environmental decision making in the coastal districts and coastal zone.

Permit Overlay Function: Environmental protection requires knowledge of existing property rights, land use designations, and permitted activity. This project provides the ability to overlay

these and other themes onto the image basemap and elevation model, and view proximity of proposed and approved projects to sensitive environmental areas including wetlands, tidelands, and designated habitat areas. The content of the NOAA-DNR Shorezone projects is incorporated. The DNR Land Records Information Section, GIS Unit will lead this portion.

Product Delivery: Products will be delivered through existing web-based programs at the University of Alaska and DNR. The Statewide Digital Mapping Initiative, UAF Geographic Information Network of Alaska, and DNR Alaska Mapper all provide proven, heavily used programs that access data via web browser maps, online archives, data extraction, and open standards web services. Federal, state, and local agencies would have access to source data; distinctions can be maintained between full public access and agency restricted access using login controls. To expand public access, data sharing with commercial map vendors (e.g. Google, Yahoo, Microsoft) has potential.

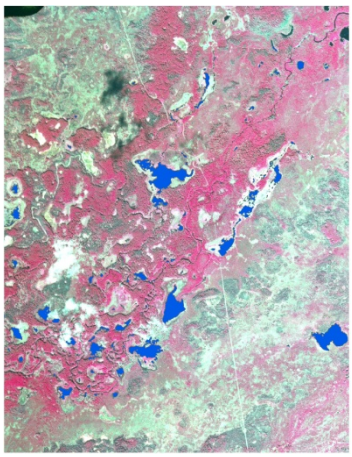
About one-third of the total project area; i.e. one third of all lands within Coastal Districts and Coastal Zones would be delivered in each of the three active years.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE
This project is consistent with Authorized Use #1 – *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.*

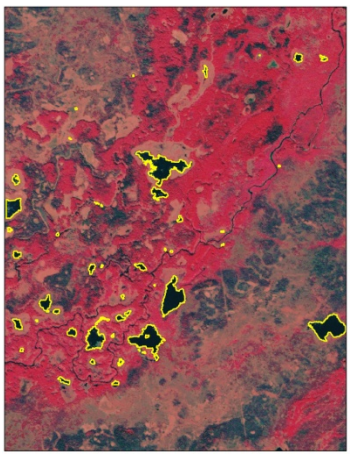
Habitat issues, wetlands management, fisheries protection, water resource management, and other environmental control and monitoring processes require baseline information from which to build management plans and impact assessments. Imagery and elevation models are needed to identify and monitor changes to Alaska's landscape due to climate change, such as coastal erosion, permafrost degradation, and vegetation changes. Updated imagery and elevation maps support scientists who create models for agencies responding to such natural hazards as coastal storms and flooding, wildfires, tsunamis and volcanic eruptions. Land and resource managers on the state, federal and local levels will use the baseline information generated in this project when evaluating development proposals to make decisions that will protect and conserve coastal areas, including wetlands. It is essential that such decisions be base on accurate and up-to-date information. Basemaps can address such questions as the proximity of a proposed development to critical habitat areas, provide tools for corridor analysis to minimize the impacts of roads, camps, and airstrips, and provide the ability to generate easy to understand maps of accepted projects as a communication tool with general public. Basemaps also provide a benchmark for Coastal Districts to monitor wetlands and vegetation changes. Examples of wetland and coastal monitoring are provided below. Glacial changes, coastline migration, post-burn vegetation growth, biomass estimates for alternative energy, siting for communication towers, and changes in human related infrastructure are all beneficial applications from a basemap project. The first example shows an automated processing change detection example for a wetlands area. The three examples appended show common types of changes in Alaska's coastal areas: coastal erosion, coastal inundation, expansion of the brush line, and vegetation and lake changes driven by permafrost degradation.

This project provides a new Coastal District- and Coastal Zone-wide imagery snapshot, improved elevation data, and mapped land and permit status information. This project will give

coastal resource managers a current, comprehensive, accurate view of coastal areas enabling them to conserve, protect, and restore them based upon timely, accurate geospatial information.



1978 CIR Aerial Photos



2006 Spot5 Image

The need to monitor wetlands can be seen in these two images. In the ortho-rectified 1978 photo on the left, the lakes are shown in blue. On the right is 2006 Spot5 image, in which the lakes are outlined in yellow. Notice that a number of the lakes are missing from the Spot5 image, having grown in or dried up. (Images provided by DNR Division of Forestry, Northern Region.)

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The Statewide Digital Mapping Initiative (SDMI) has established working relationships with leading federal agencies involved with mapping and charting in Alaska. The Geographic Information Network of Alaska (GINA) at the University of Alaska has established program participation agreements with the USDA Natural Resources Conservation Service, USGS EROS Data Center, and NOAA- National Environmental, Satellite, Data, and Information Services Division (NESDIS). The US Fish and Wildlife Service has worked in partnership with SDMI to uplift licenses to allow public viewing of satellite imagery for the Yukon Delta region. The Bureau of Land Management and USGS helped sponsor the July 2008 Alaska DEM workshop and ongoing development work, and have contributed extensive public imagery and elevation models, most recently for portions of the National Petroleum Reserve Alaska (NPRA) on the North Slope. These basemaps were successfully used to support an environmental impact statement used to offer areas within NPRA for oil and gas competitive leasing. Managers are in dialog with the National Park Service, Federal Aviation Administration, and through first responder responsibilities at the Department of Military and Veterans Affairs, with branches of the military.

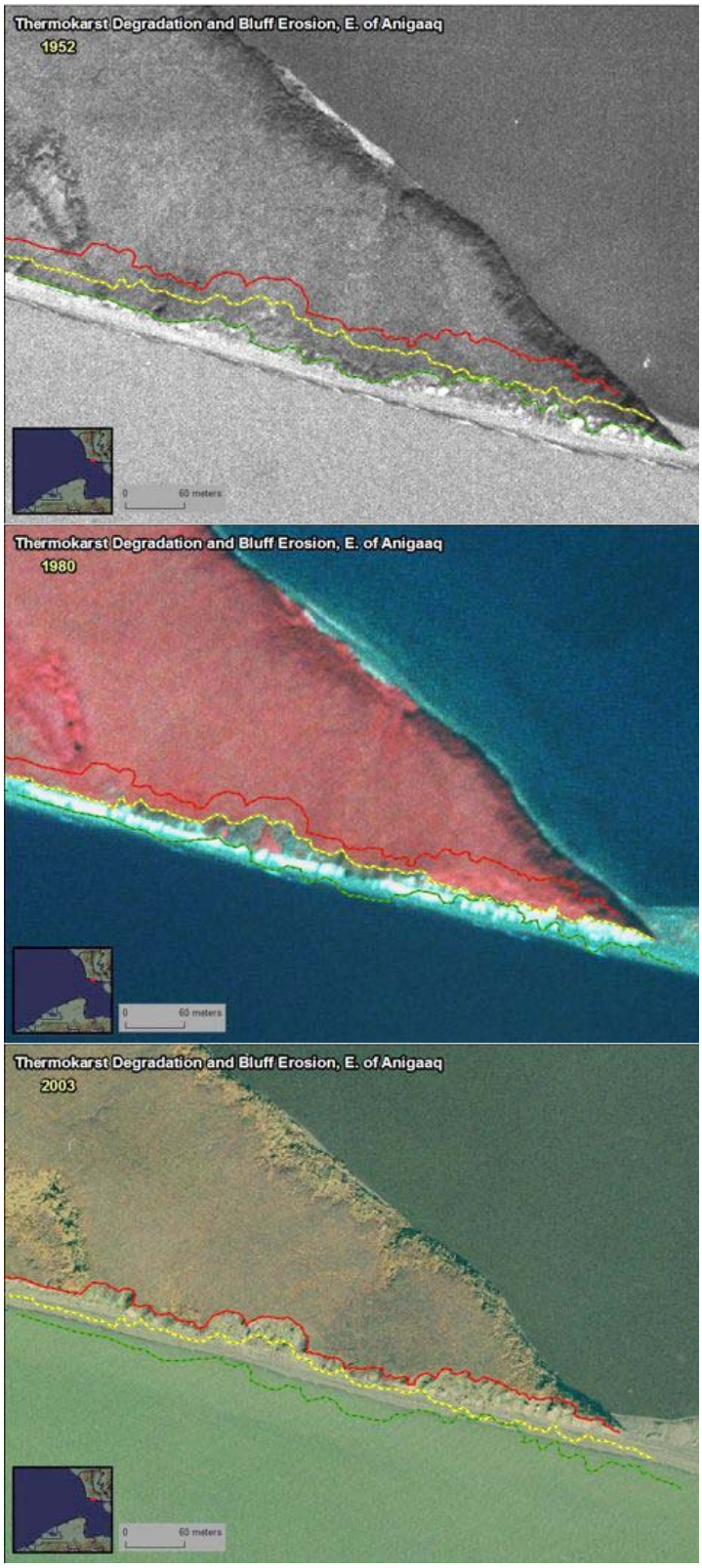
The SDMI archives and web services hold imagery and DEM data from every agency performing mapping in Alaska, from the Census Bureau to local governments. The SDMI is undoubtedly the most comprehensive and easily accessible point to access imagery for Alaska.

Project participants are involved with the National States Geographic Information Council, NSGIC, which has one seat on the Federal Geographic Information Committee. NSGIC is

working with federal agencies in support of a national mapping initiative and Alaska participates in these planning efforts. Members are active in the Alaska Geographic Data Committee.

COST SHARING OR MATCHING OF FUNDS

CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.

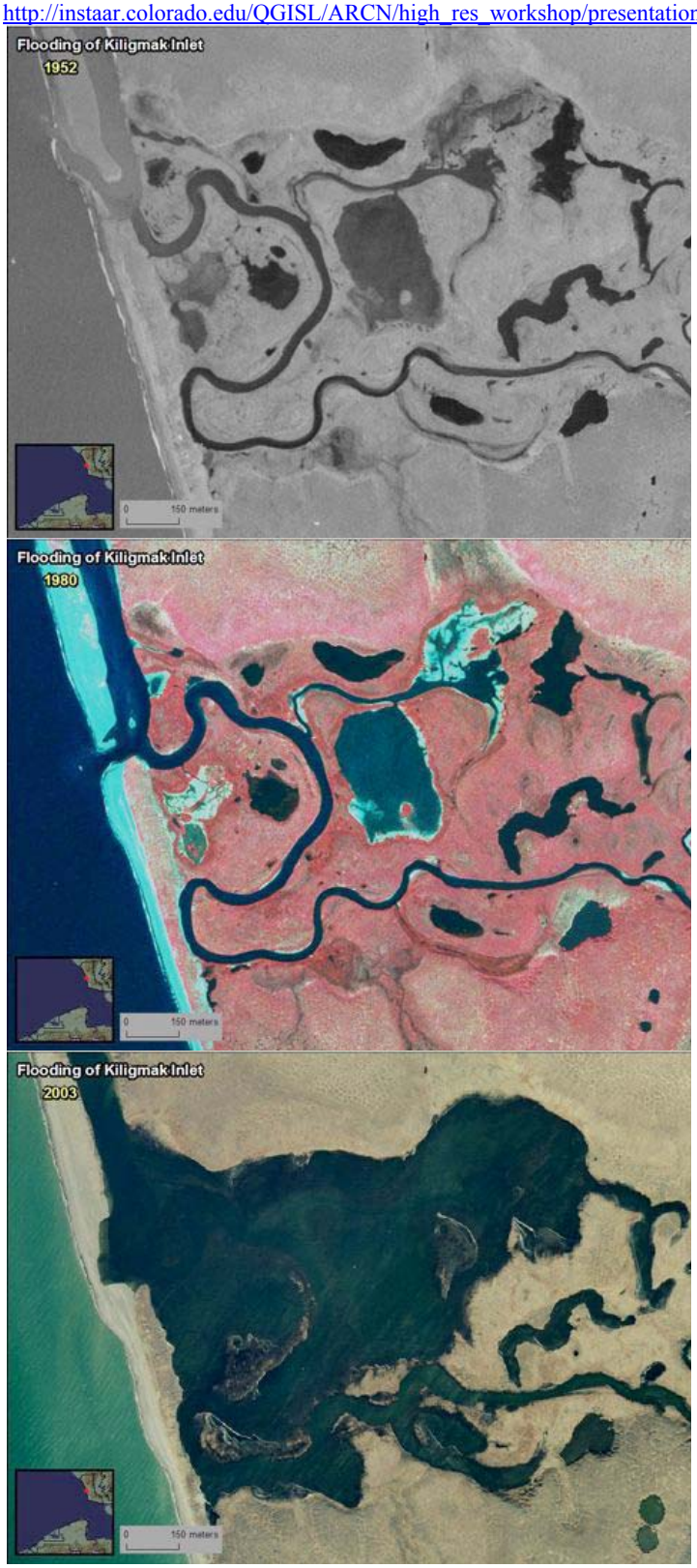


Thermokarst degradation and bluff erosion in the coastal zones can be caused by several effects. Warming temperatures causes ice-rich permafrost to melt, resulting in the collapse of the ground surface and the formation of hummocky ground and thermokarst lakes. In the example show at left, the coast is rapidly eroding as permafrost-rich soils that from the coastal bluff are impacted by waves. The sea ice edge has trended further north in recent decades, resulting in longer fetch and more energetic waves reaching the shore for longer seasons. Previously, the sea ice was further south for more of the year, protecting the shoreline from strong winter storm waves.

Orthoimagery will enable coastal managers to identify areas that have changed in the decades since Alaska's coastal zones were last mapped. It will also provide a baseline against which to measure change in the coming decades.

Using High-Res. Orthoimagery for Environmental Change Detection & Analysis in Northern Alaska
By William F. Manley , Leanne R. Lestak INSTAAR, University of Colorado

http://instaar.colorado.edu/QGISL/ARCN/high_res_workshop/presentations/Manley_High_Res_2008.pdf



Thermokarst degradation and subsidence due to melting of ice-rich soils resulted in the flooding of Kiligmak Inlet in western Alaska. An entirely new ecosystem is now in place at this site.

Orthoimagery will enable coastal managers to identify changes to coastal water resources. Another common event, especially on the north Arctic coast, is for the coast to erode back into a freshwater lake, causing it to join the ocean and result in the change of an ecosystem from a freshwater to a brackish water system. The ecosystem services are very different as a result of this change in salinity.

Using High-Res. Orthoimagery for Environmental Change Detection & Analysis in Northern Alaska
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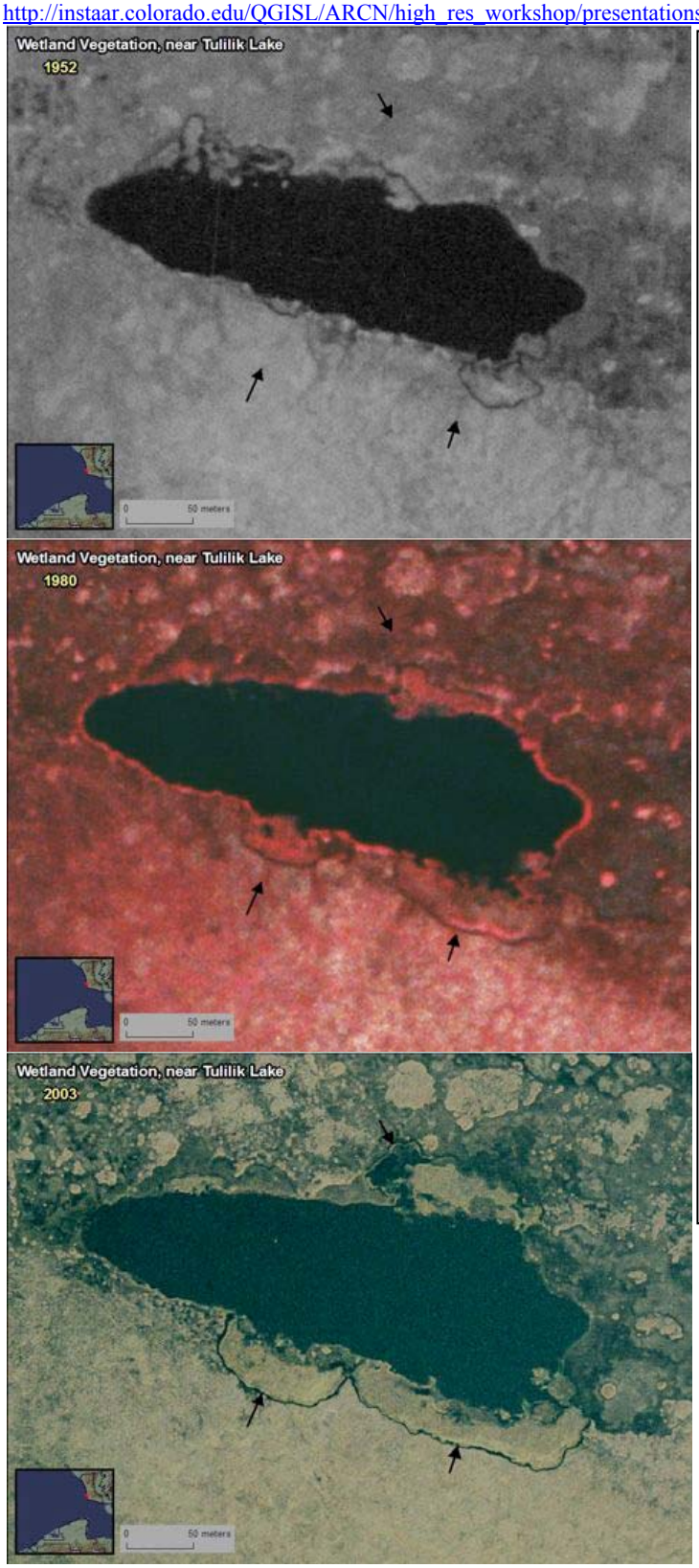
http://instaar.colorado.edu/QGISL/ARCN/high_res_workshop/presentations/Manley_High_Res_2008.pdf

The shrub-line is expanding all over Alaska, especially in the northern and western parts of the state due to climate change. Warmer conditions are allowing shrubs to grow in tundra areas previously bare of woody vegetation. This has significant effects on both the plant and animal ecology of the area overtaken by shrubs.

Orthoimagery will enable coastal managers to identify changes in the shrub-line. It is an important indicator of climate change that has a large impact on coastal ecosystems.

Using High-Res. Orthoimagery for Environmental Change Detection & Analysis in Northern Alaska

By William F. Manley , Leanne R. Lestak INSTAAR, University of Colorado
http://instaar.colorado.edu/QGISL/ARCN/high_res_workshop/presentations/Manley_High_Res_2008.pdf



Due to melting of permafrost, coastal wetlands are undergoing constant change. Freshwater lakes and wetlands are critical habitat for many species, especially migratory birds, including several threatened species. There is intense interest from land and wildlife managers regarding the ecosystem services provided by freshwater lakes—everything from nesting and molting areas for birds to water withdrawals for ice road construction hinges on fresh water lake habitats.

Orthoimagery will enable coastal managers to map and monitor lakes. As shown in the example above in the text, the lakes of Alaska have changed dramatically in recent decades, and new orthoimagery will allow their locations and extents to be updated, resulting in accurate, current information being available for coastal management decision making.

Using High-Res. Orthoimagery for Environmental Change Detection & Analysis in Northern Alaska
By William F. Manley , Leanne R. Lestak INSTAAR, University of Colorado
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STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Department of Commerce, Community and Economic Development
Division of Community & Regional Affairs (DCRA)

PROJECT TITLE: Community Mapping for Southeast Alaska

PROJECT CONTACT

Contact Name: Nicole Grewe
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PROJECT LOCATION

The project will provide community profile maps for small coastal communities in southeast Alaska that have not had new maps in more than twenty years. The following communities are anticipated to be included in this project: Tenakee Springs, Pelican, Gustavus, Port Protection, Whale Pass, Naukati Bay, Hollis, Coffman Cove, Thorne Bay, Hyder, Metlakatla, and Port Alexander.

PROJECT DURATION

3 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$701,200	$233,740	$467,460	0	0

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
$701,200	0	0	$701,200	0

PROJECT DESCRIPTION

Maps are an essential tool for organizing and displaying information necessary for the protection of natural resources. This project will produce community maps for 12 coastal communities. Each map series will include existing structures, utilities, wetland areas, and streams. New color aerial photography will be obtained so that the improved lands and important natural areas can be displayed on maps with high resolution rectified imagery. Improved areas such as roads, trails, drainage improvements, utilities, property boundaries, and building and facility structures will be identified. Streams, lakes, wetlands, vegetation, environmentally sensitive lands and areas susceptible to natural and man made hazards will also be included. Since erosion and drainage

are concerns in this region comprehensive contour mapping will be prepared for each community.

As noted in the State of Alaska Coastal Impact Assistance Program 2008 Final Plan, "*The challenge of managing the state's abundant resources to ensure protection of its coastal areas is further heightened by a lack of baseline data. . . . Many of the CIAP projects proposed focus on acquisition of baseline data, mapping of habitats, or mapping of natural hazards . . . It is imperative that managers know what exists and what impacts have occurred or are likely to occur in order to make sound resource management decisions and develop effective avoidance, minimization, and/or mitigation measures to ensure environmental protection*." In southeast Alaska, program efforts will be greatly enhanced by the availability of current, accurate maps of developed areas.

The preparation of maps for the small communities of southeast Alaska has been hampered by a lack of financial resources to participate in a regional mapping project, and a lack of human resources to secure grants or other funds. The communities included in this project all have a population of less than 1500, and five of the communities have no local government (city, tribal, or borough). In the absence of a local government, communities may lack the capacity even to seek the grant funds and technical assistance necessary to contract for the preparation of maps. As a result, five of the communities in this project have no community map, and of the communities with maps none is more recent than 1984. Yet the development activity in those communities, if not well-planned and carefully sited, may have severe consequences for environmental protection.

In order to fill the gap in financial and technical resources, DCRA will partner with Juneau Economic Development Council (JEDC) to oversee the preparation of the maps (see attached letter). DCRA will provide coordination with state and federal agencies, prepare map layouts and draft the Request for Proposals, and monitor the performance of the mapping contractor. JEDC will serve as the liaison to the communities and to other regional organizations.

In collaboration with JEDC, DCRA will conduct project scoping meetings with agencies such as Alaska Village Safe Water, Alaska Native Tribal Health Consortium, and Alaska Department of Transportation. Preparation of the maps begins with obtaining aerial photography, which can only be done under the right weather conditions*. Upon completion of the photography, field crews travel to each community to conduct ground control surveys. The communities are sent draft map sheets to use in preparing a structure inventory and designating land uses. Specific land identification requested from the community includes areas used for subsistence hunting and gathering, culturally and environmentally sensitive areas, and areas subject to erosion. The mapping contractor also gathers land records and utility information. Project milestones are as follows:

- In Year 1, weather permitting*, aerial photography and ground control will take place.
- In Year 2, map processing will take place.
- Year 3 will see the completion of any work delayed by poor weather conditions.

The completed maps are widely used as base maps for GIS applications, and have also been used as a tool for hazard mitigation planning and community planning, as a base map for flood mapping, and for designation of land uses and protection of environmentally sensitive areas.

* Photography must be flown when the sun angle is above 30 degrees, no clouds are casting shadow on the target area, the ground is free of snow, and there is no standing water from flooding.

MEASUREABLE GOALS AND OBJECTIVES
This project is anticipated to result in the preparation of community profile maps, in both hard copy and digital form, for 12 communities in southeast Alaska.
Year 1 – draft maps for 12 communities
Year 2 – final maps for 12 communities
Year 3 – completion of work delayed by weather conditions in Year 1

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE
This project is consistent with CIAP Authorized Use #1: *Projects and activities for the conservation, protection, or conservation of coastal areas, including wetlands.*

As noted in the State of Alaska Coastal Impact Assistance Program 2008 Final Plan, "*The challenge of managing the state's abundant resources to ensure protection of its coastal areas is further heightened by a lack of baseline data . . . It is imperative that managers know what exists and what impacts have occurred or are likely to occur in order to make sound resource management decisions and develop effective avoidance, minimization, and/or mitigation measures to ensure environmental protection* " (p. 11). In southeast Alaska, efforts to implement the state wide coastal management program and the local coastal management plans will be greatly enhanced by the availability of current, accurate maps of developed areas.

The maps will provide an invaluable tool for communities to identify existing and potential environmental hazards and to develop strategies to mitigate those hazards. The city of Pelican, population 110, is typical of the communities served by this project. Pelican, a fishing community incorporated in 1943, is located on the northwest coast of Chichagof Island on Lisianski Inlet. There is no bridge to the island - Pelican is dependent on float planes and the state ferry for travel. Most of the community is built on pilings over the tidelands. A boardwalk serves as the town's main thoroughfare, due to the lack of flat land. As noted in the Pelican Coastal Management Plan, "Pelican's steep topography, high occurrence of unstable soils on slopes, abundant precipitation, and potential for earthquake make it susceptible to mass wasting, erosion, and avalanche. Road building or removal of vegetation on steep slopes has the potential to increase the frequency of mass wasting events that could cause significant environmental damage" (p. 3-12). In such an environment, a detailed community map is essential to planning future development so as to avoid environmental harm. The first goal listed in the Pelican Coastal Management Plan under Coastal Development and Land Use is "Encourage new home construction," and the second is "Create an attractive, accessible, and enjoyable waterfront," clearly indicating that the community is looking ahead to future development. This future development will put pressure on the coastal environment.

Thorne Bay is another community included in this project that is also a designated coastal district. Thorne Bay began as a logging camp for timber operations in the Tongass National Forest. Logging roads connect the community of 467 residents to other communities on Prince of

Wales Island, providing access to the state ferry dock at Hollis and the airport at Klawock. The February 2006 Thorne Bay District Coastal Management Program plan includes a wide range of program goals and objectives for development projects, while noting that "Slopes exist within the coastal district of sufficient magnitude to require consideration for risks of landslides and erosion" (p. 40). Program objectives include "Identify, designate, and manage environmentally sensitive areas, including flood hazard areas, slide hazard areas, and areas with excessive slope" (p. 82). Maps provide an ideal tool for such hazard identification and will lead to the protection of coastal areas.

Examples similar to those mentioned above exist in each of the communities slated for mapping. The availability of maps showing the environmentally sensitive areas in the identified communities and areas subject to natural hazards, will allow land managers to better apply mitigation measures to development projects that will result in the protection of coastal areas.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

DCRA has had an active program to develop new community maps since 2002, resulting in the completion of maps for 118 communities. As a result of the earlier projects, DCRA has a well-established network with other agencies to collaborate on mapping projects. In addition to holding scoping meetings with Alaska Village Safe Water, the federally-funded Alaska Native Tribal Health Consortium, and Alaska Department of Transportation, contacts are also made to appropriate staff within USDA Natural Resources Conservation Service and Bureau of Indian Affairs in the early stages of a project.

JEDC will provide leadership in outreach to the communities as well as to other regional organizations.

COST SHARING OR MATCHING OF FUNDS

DCRA does not intend to use CIAP funds for cost sharing or matching purposes.

Denali Commission
510 L Street, Suite 410
Anchorage, AK 99501

907.271.1414 *tel*
907.271.1415 *fax*
888.480.4321 *toll free*
www.denali.gov

January 22, 2009

Mr. Keith Jost, Natural Resource Specialist
State of Alaska, DCRA
550 West 7th Avenue, Suite 1770
Anchorage, AK 99501

Dear Mr. Jost:

I am pleased to learn that the Alaska Division of Community and Regional Affairs (DCRA) is continuing to pursue opportunities to prepare maps for Alaska's small communities, and I would like to express support for your proposals to the Coastal Impact Assistance Program to map communities in southeast Alaska and in the Yukon River watershed.

DCRA's community maps are invaluable to our work in evaluating and funding infrastructure projects. The Denali Commission's policies, confirmed at the Commission's November 2008 meeting, include in the considerations for Investment Guidance, "Facilities will be placed so as to be protected from imminent environmental threats such as flooding and erosion. Long term investments generally will not be made in areas that are subject to imminent environmental threats." Community maps are an invaluable tool in ensuring that the Commission's funds are invested in facilities that are sustainable and that enhance the health and safety of Alaska residents.

Sincerely,

George Cannelos
Federal Co-Chair

GJC:btk:jh

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game – Division of Wildlife Conservation

PROJECT TITLE: Evaluating the Distribution and Status of Polar Bears to Improve Oil and Gas Mitigation in the Chukchi Sea

PROJECT CONTACT

Contact Name: Sean Farley
Address: Alaska Dept of Fish and Game,
333 Raspberry Rd., Anchorage, AK 99518
Telephone Number: (907) 267-2203
Fax Number: (907) 267-2433
Email Address: sean.farley@alaska.gov

PROJECT LOCATION

Polar bears will be captured on the sea ice off the US Chukchi Sea coastline between Point Hope and Shishmaref (Figure 1). In 2008, capture operations were based out of Kotzebue, Point Hope, and Red Dog mine port site. In 2009, captures are scheduled to be based out of Red Dog mine port site only. Future bases may include Shishmaref or St. Lawrence Island. Polar bear movements in this area overlap with oil and gas operations in the Chukchi Sea Lease Sale Area 193. Figure 1 shows the locations of 3 adult females in September of 2008.

PROJECT DURATION

This project is a four year project. The first two years (2008 and 2009) will be completed with non CIAP funding. CIAP will fund the third (2010) and fourth (2011) year of the project

ESTIMATED COST

Costs below are the amount requested only and do not reflect the total cost of the project. US Fish and Wildlife Service will cover the remaining costs associated with the project.

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
637,800	318,900	318,900		

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
637,800	0	0	637,800	0

PROJECT DESCRIPTION

This study seeks to obtain information on the habitat use, movement patterns, diet, and nutritional status of polar bears in the Chukchi Sea population in relation to areas of oil and gas activities and changing sea ice conditions. This information is needed to develop mitigation plans

for oil and gas activities as specified under the Marine Mammal Protection Act and to inform harvest management as mandated under the US-Russia Bilateral Agreement for the Conservation of polar bears.

In 2008, the U.S. Fish and Wildlife Service and the U.S. Geological Survey initiated a study of polar bears in the Chukchi Sea, capturing 35 animals. Continued work is planned for 2009, including the capture and collaring of an additional 30-50 polar bears of all sex and age classes off the US Chukchi Sea coast. All polar bears encountered will be captured. Information collected on each animal include gender, age (determined from tooth sectioning), body mass, reproductive condition, body composition, skull size, total body length, and blood samples and fat biopsies for diet assessment and for disease and contaminants surveys. Adult females will be outfitted with radio collars that transmit location data through the satellite Argos system and with sensors that determine the percent of time bears spend swimming in open water. Blood samples collected will be analyzed for stable isotopes to aid with identifying dietary components, and total blood nitrogen, cholesterol, triglycerides, and urea: creatinine ratios to identify potential fasting behavior. Fat biopsies will be analyzed for total lipid content as a measure of condition and fatty acid content as an additional measure of dietary history. Funding is needed to continue this work in 2010 (Year 1 of this funding request) and 2011 (Year 2) in order to have adequate data to assess polar bear movements and population health.

This project involves the cooperation and collaboration of a number of agencies and public entities. The proposed study would be collaborative between the US Fish and Wildlife Service and the Alaska Department of Fish and Game. The combined expertise on bear physiology, behavior, and nutrition, in these two agencies, will allow a unique opportunity to gain insights into the health of the Chukchi Sea polar bear population.

An extensive outreach effort has also been conducted to obtain feedback on this study from local communities and stakeholders, including Native and City Councils in surrounding communities (e.g., Point Hope, Kotzebue, Shishmaref, and Kivalina), the North Slope Borough, the Alaska Nanuuq Commission, and Selawik National Wildlife Refuge. Field reports and work plans are distributed annually. Village visits are planned for Shishmaref, Kivalina, Point Hope, and Kotzebue in the summer of 2009. As a result of this effort, there is local support for this research program. Native and City Councils expressed support, in particular, due to their interest in better understanding how to mitigate the potential effects of oil and gas activities on polar bears in this area.

MEASUREABLE GOALS AND OBJECTIVES

Project Outcomes:
Non-CIAP funds: The first two years of data on this 4 year project were already collected in 2008 and 2009.

- Year 1 (2008): 35 polar bears of all sex and age classes were captured and 11 adult females were fitted with radio collars.

- Year 2 (2009): 39 polar bears of all sex and age classes were captured and 10 adult females were fitted with radio collars.

CIAP funding: Funding requested in this proposal would be used for 2 subsequent years of study (2010 and 2011). For each of these years our goal will be to capture up to 50 bears of all sex and age classes and collar all the adult females we capture. Once data collection and sample analyses are completed in 2011, the following products are expected in the form of peer-reviewed publications and reports:

1. An analysis of habitat use and movement patterns in relation to seasonal and annual availability of sea ice habitat and areas of oil and gas activity.
2. An analysis of bear diet, fasting and swimming behavior, and body condition relative to the nearby Southern Beaufort Sea population and in relation to annual variation in sea ice conditions.
3. Estimation of vital rates for the population. Evaluation of sampling design and the expected power of capture-recapture studies to detect changes in demographic status will be conducted following the first 2 years of data collection (2008 & 2009).

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This request for funding of polar bear research will directly support CIAP requirement #1: *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands*.

Mitigation actions for marine mammals, including polar bears, are required under the Marine Mammal Protection Act for nearshore and off-shore oil and gas leases. In the Chukchi Sea little is known about the movement patterns or ice habitat use of polar bears in oil and gas leasing areas. This lack of information hampers the development of effective mitigation plans for areas in which exploration is ongoing and in areas of future development. Additional data on the status of this population, including vital rates, bear health and condition, and population size, are currently lacking. Successful mitigation and the development of a sound Environmental Assessment will require collection of critical information on polar bear population status, trends, and the effect(s) of sea ice changes on the diet and movements of polar bears. The results of our proposed study will be used by wildlife and resource managers to develop appropriate measures to mitigate potential effects of oil and gas offshore leases on polar bears movements and population health.

Location data will identify seasonal areas of overlap between polar bears and current oil and gas activities and provide information on habitat use relative to sea ice conditions. The latter information will be particularly important for evaluating whether open water activities in the Chukchi Sea lease area need to be more actively mitigated for potential interactions with polar bears. For example, sensors on bear collars that identify swimming behavior will allow assessment of the potential for interactions between boats and swimming bears in the fall. In addition, Environmental Assessments under the Marine Mammal Protection Act require estimates of the number of takes (defined as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal”) which can only be estimated via information on the potential distribution of polar bears in areas of oil and gas operations. This study will provide information that can be used directly in environmental planning and assessment documents used to ensure coastal areas are protected.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

This project is a joint effort between the US Fish and Wildlife Service and the Alaska Department of Fish and Game. The US Geological Survey has been and is currently a collaborator on this study.

COST SHARING OR MATCHING OF FUNDS

Funds from CIAP are not currently intended to be used for matching purposes. FWS intends to contribute a minimum of $640,000 towards this project between 2009 and 2011. While additional funds will be sought to enable an extension of the field seasons in both years of this study, additional funding is not required to carry out the work. Supplemental funding may be secured from Fish and Wildlife Service base funds each year or other organizations.

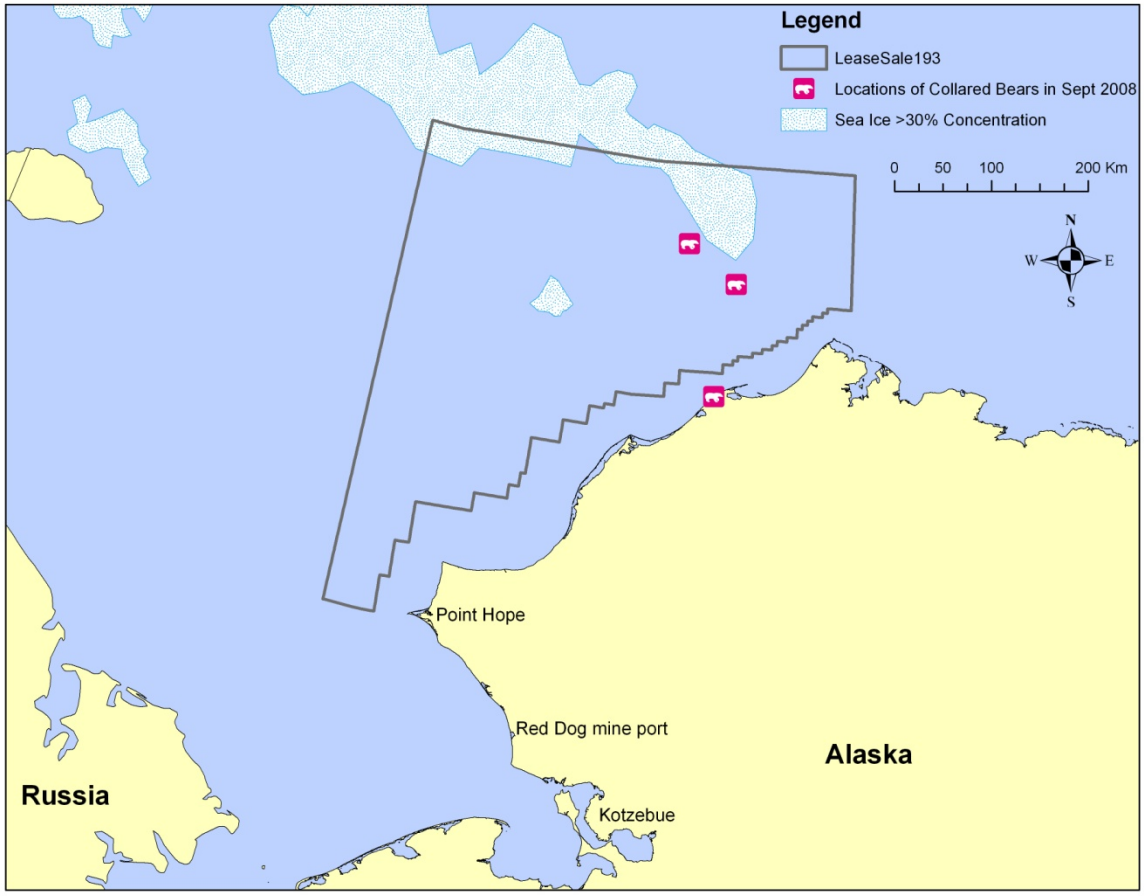

Figure 1: Location of logistic bases for polar bear capture work in the Chukchi Sea (Point Hope, Red Dog mine port, and Kotzebue) and the locations of 3 adult female polar bears collared in September of 2009 in relation to Lease Sale 193 and available sea ice. Additional logistic bases may be explored at Shishmaref and St. Lawrence Island.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Department of Fish and Game, Division of Habitat

PROJECT TITLE: Evaluation of Bird Deterrent Techniques to Protect Coastal Areas from Oil Spills

PROJECT CONTACT

Contact Name: Joe Hitselberger
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Division of Habitat
P.O. Box 110024
Juneau, AK 99811
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Email Address: joe.hitselberger@alaska.gov

PROJECT LOCATION

The project will occur along the coast of the western side of upper Cook Inlet. Specific sampling locations will be determined based on observations during the spring and fall aerial surveys.

PROJECT DURATION

The project is proposed as a 1-year project, including spring and fall field testing and subsequent report writing. Depending on the timing of CIAP funding availability, field sampling could occur within the first year of funding or may need to be deferred to the following year.

ESTIMATED COST

The major assumptions associated with the proposed budget include: the Alaska Department of Fish and Game (ADF&G) will provide technical expertise and field personnel, 1-day aerial surveys will be required in the spring and fall to locate birds and determine sampling locations, Cook Inlet oil spill response cooperatives will be contracted for vessel and skiff needs, two 1-week sampling events will occur (spring and fall), temporary field camps will be established using existing infrastructure (major equipment purchases or investment of set-up time will not be required), and in-kind support of personnel and bird hazing equipment from oil spill response cooperatives will be used to the extent practicable.

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
54,300	54,300	-	-	-

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
54,300			54,300	

PROJECT DESCRIPTION

The Wildlife Protection Guidelines for Alaska, within the State/Federal Unified Response Plan, identifies the use of deterrents as a secondary response strategy for minimizing oil effects on migratory birds. ADF&G, in coordination with the United States Fish and Wildlife Service (USFWS) and the United States Department of Agriculture/Wildlife Services (USDA/WS), has recommended that many crude and non-crude oil facilities or transport companies maintain bird deterrent or hazing equipment and trained individuals to preclude oiling of migratory birds in the event of a spill. The capability to haze wildlife has been required by the Alaska Department of Environmental Conservation (ADEC) through the department's oil spill prevention and contingency plan approvals (18 AAC 75). The typical bird hazing kit is designed for a shore-based or boat-based hazing program and includes 12-gauge cracker shells, 15-mm firecrackers, and reflecting tape and balloons. In addition, some companies have propane cannons within their response equipment inventories. There is also at least one hazing device that is not shore-based (e.g., Breco Buoy) for use in open water situations. While companies have cooperated in establishing the capability to haze wildlife, there has been limited use or testing of these bird hazing kits during an oil spill response in Alaska.

Various devices and techniques have been evaluated for use in oil spills (Greer and O'Connor 1994; Koski, Kevan, and Richardson 1993; Lehoux and Bordage 2000; Sharp 1978; Ward 1977). A few of the studies have focused on the use of deterrent devices in open-water habitats (Lehoux and Balanger 1995; Hounsell and Reilly 1995; Whissom and Takekawa 1998) and some work has been done with individual techniques within habitats similar to Southcentral Alaska (Biggs, Sverre, and Boisvert 1978). None of the studies have focused on determining the effectiveness of a combination of deterrent techniques in habitats similar to those found in Southcentral Alaska. Much of the west side of Cook Inlet consists of extensive tide flats and wetlands used by migrating waterfowl and shorebirds in the spring and fall. Large tidal fluctuations pose additional complications in effectively deterring birds away from oiled intertidal areas. Field testing of prescribed hazing kits to evaluate their effectiveness in Southcentral Alaska conditions would aid in the development of wildlife protection and response contingency planning. Further, because intertidal habitats similar to western Cook Inlet exist throughout Alaska, knowledge gained from this study will have potential effects on statewide oil spill response planning and strategies and can be applied in future Outer Continental Shelf (OCS) oil and gas development in Alaska.

The over-arching goal of this project is to test the current bird deterrent equipment and techniques available in Alaska and determine their effectiveness in western Cook Inlet. Project findings may suggest needed modifications to wildlife hazing kits and/or techniques currently in place. Further, the project findings may have potential impacts on oil spill response planning, procedures, and requirements and could redefine oil spill response requirements statewide.

The project will be conducted during the spring and fall (if permitted), along the western Cook Inlet coastline. The western Cook Inlet area was chosen because of the relative simplicity of logistics compared to other areas of the state; this approach assumes that information gathered in western Cook Inlet will have applicability to other areas statewide, including locations planned for OCS oil and gas development. Work will be conducted by the ADF&G, Division of Habitat,

in coordination with ADF&G, Division of Wildlife Conservation, the USFWS and the USDA/WS. Logistical support may be provided by oil spill response action contractors in Cook Inlet. Specific project tasks include:

1. Conduct aerial surveys to determine distribution, species diversity, and approximate abundance of spring and fall staging waterfowl and shorebirds in upper western Cook Inlet.
2. Select test and control sites in western Cook Inlet based on aerial survey information.
3. Identify and record species, flock sizes, and bird activity within test and control sites, tide stage, and weather conditions prior to initiating hazing activities.
4. Using recommended industry hazing kits, expose birds within given test area to selected hazing devices and techniques individually and in combination; record numbers of individuals remaining, by species; distance from hazing device(s); effort of hazing activities; and other appropriate measures of effectiveness.
5. Conduct testing in the spring and fall to evaluate differences in the effectiveness on spring and fall migrating waterfowl and shorebirds.

MEASUREABLE GOALS AND OBJECTIVES

The specific project objectives are to:

1. Quantitatively field test bird deterrent devices and techniques, both individually and in various combinations, for effectiveness in hazing waterfowl and shorebirds varying in species and flock size from tidal flats and wetland areas.
2. Quantify differences in the effectiveness of bird deterrents on spring and fall migrating birds.
3. Provide recommendations, as appropriate, to modify bird hazing kits or hazing techniques for use in Cook Inlet and statewide spill responses to account for differences in technique effectiveness under different testing scenarios.
4. Work with industry response action contractors, the Minerals Management Service (MMS), the U.S. Coast Guard (USCG), the Environmental Protection Agency, the ADEC, and the USFWS to incorporate study findings into spill contingency plan procedures and equipment to increase the potential for successful bird hazing operations.

Objectives 1 through 3 will be presented in a technical report produced by ADF&G. Objective 4 will be accomplished by distributing the technical report to partner agencies and industry groups, and as a part ADF&G's participation in ongoing oil and gas contingency planning.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

The project is consistent with multiple CIAP authorized uses and the strongest connection is with CIAP Authorized Use 1 – *Projects and activities that directly or indirectly benefit the natural coastal environment through the conservation, protection, or restoration of the natural coastal environment*.

Evaluation of wildlife deterrent techniques in Alaska is necessary to improve the state's oil spill wildlife response capabilities. Improved capabilities provide a direct benefit for the protection of coastal environments in the event of an oil spill by preventing birds and wildlife from congregating in oiled coastal areas and allowing habitat clean-up activities to proceed in the absence of wildlife. Oil spill response agencies and cooperatives support the improvement of oil

spill response equipment and techniques and recognize that the currently approved equipment and techniques have not been rigorously tested.

Numerous possibilities exist for future oil and gas development in Southcentral Alaska. The MMS is evaluating Oil and Gas Lease Sale 214, North Aleutian Basin, as part of the Outer Continental Shelf Oil and Gas Leasing Program, 2007-2012. Further, two potential State-offered lease sales in the region may provide additional development opportunity, including the Cook Inlet and Alaska Peninsula area wide lease sales. Oil and gas exploration and development introduces the potential for oil spills. Companies conducting oil and gas exploration and development activities must have approved State of Alaska oil spill prevention and contingency plans. Industry contingency plans include a wildlife response component, which generally describes the plan holder's capability for conducting wildlife deterrent and hazing activities. In addition, the Wildlife Protection Guidelines for Alaska, Annex G in the State/federal Unified Response Plan, identify wildlife protection strategies in the event of an oil spill. Project findings will assist regulators in improving wildlife response capabilities through both industry and government spill contingency plans; although our testing efforts will be focused in western Cook Inlet, study findings will have potential statewide impacts, including areas planned for OCS oil and gas development.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

ADF&G is a member in the Wildlife Protection Working Group, which was established by the Alaska Regional Response Team (ARRT) in 1987. The Working Group is chaired by a representative from the U.S. Department of the Interior (USDOI), Office of Environmental Policy and Compliance and includes representatives from USFWS, USCG, oil industry, and spill response cooperatives, including Alaska Clean Seas and Cook Inlet Spill Prevention and Response. The Working Group prepared the Wildlife Protection Guidelines for Alaska, which describes wildlife deterrents/hazing as a response option to preclude or minimize oiling impacts to wildlife. ADF&G coordinated with USFWS and USDOI Working Group members and with a USDA/WS representative in identifying the need to evaluate wildlife deterrent equipment and techniques. USDA/WS currently provides training in the use of wildlife deterrents to industry representatives and spill cooperatives to meet wildlife response contingency planning training requirements. The USFWS and USDOI Working Group members and the USDA/WS representative have expressed support for the proposed project.

COST SHARING OR MATCHING OF FUNDS

CIAP funds will not be used for cost sharing or matching purposes. Oil spill response cooperatives support this project and may potentially provide in-kind resources and logistics support for field sampling efforts.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game
Division of Sport Fish

PROJECT TITLE: Anadromous Cataloging in Bristol Bay and Cook Inlet-Shelikof Drainages

PROJECT CONTACT

Contact Name: Joseph D. Buckwalter
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PROJECT LOCATION

Selected Bristol Bay, Shelikof Strait, and Cook Inlet drainages (see Figure 1, attached). High priority target streams within the study area will be identified and ranked according to existing ADF&G protocols, and with input from collaborators.

PROJECT DURATION

3 years

ESTIMATED COST

Spending Estimate ($)			
TOTAL	**Year 1**	**Year 2**	**Year 3**
1,500,000	485,297	499,854	514,849

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
1,500,000	0	0	1,500,000	0

PROJECT DESCRIPTION

The overall goal for this project is to provide information needed to enable ADF&G and other entities' fish habitat protection and mitigation activities in freshwaters expected to support anadromous fish populations likely to be impacted by oil and gas development in MMS's North Aleutian Basin and Cook Inlet-Shelikof Strait planning areas. We will contribute to this goal by filling gaps in AWC coverage, while providing information about local habitat characteristics to support adequate mitigation activities.

Oil and gas development in MMS's North Aleutian Basin and Cook Inlet-Shelikof Strait planning areas is likely to cause impacts to anadromous fish populations in this region. To

provide information needed to support habitat protection and mitigation activities, during the summers of 2010–2012, we propose to conduct a rapid, systematic inventory of anadromous fish distribution and associated aquatic and riparian habitat characteristics in a study area comprised of selected Bristol Bay, Shelikof Strait, and Cook Inlet drainages (see Figure 1, attached). Target streams will be selected to fill gaps in coverage of the State of Alaska's *Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* (AWC) in freshwater habitats expected to support anadromous fish populations likely to be impacted.

Following ADF&G's Alaska Freshwater Fish Inventory (AFFI) protocols, 3 crews, each with 2 members, will simultaneously sample fish communities in selected study reaches for approximately 20 days annually during the summers of 2010–2012. Target streams will include wadable headwater streams, raftable streams, and large boatable rivers. At selected reaches, we will sample the fish community using single-pass electrofishing with standardized sampling effort. Additionally, we will record standard water chemistry, channel morphology, and riparian habitat parameters at each study reach.

The AFFI program has a history of consultation and collaboration with multiple entities in planning and implementing fish inventory projects. This proposal was developed under close coordination with ADF&G Habitat Division staff, who will participate in planning and fieldwork for each annual inventory. In planning each year's fish inventory activities, we will continue to coordinate with other state and local stakeholders, such as other ADF&G divisions' local and regional research and management staff, local and regional native associations, and non-profit organizations, having an interest in each year's study area. In previous AFFI projects, we have offered 1–2 field crew member positions to native college interns and local state fisheries staff, and anticipate doing so again on this project.

Benefits of this project will include: 1) Providing protection and a basis for mitigation for freshwater habitats used by anadromous fish likely to be affected by oil and gas development; 2) Improving understanding of anadromous fishes' distribution and habitat use; 3) Proactively providing accessible, site-specific descriptions of local habitat conditions and fish use to enable permitting biologists to identify adequate habitat protection stipulations or additional information needs for permitting of local development activities; 4) Provide standardized, repeatable baseline information on fish use and habitat associations for comparison with future studies.

Most of the study area is within the coastal zone; however, some target streams may be located outside (upstream) of the coastal zone. Since many Alaskan fishes migrate through the coastal zone on their way to/from upstream natal or rearing habitats, cataloging anadromous waters upstream of the coastal zone will also benefit the coastal environment. Subsistence, commercial, and sport fishers within the coastal zone will benefit from protection of complementary fish habitats located upstream of the coastal zone. Migratory fishes also provide ecosystem benefits as they move through the coastal zone. For example, migrating juvenile and adult salmon are preyed upon by a range of coastal predators including marine and estuarine fish, seabirds, and mammals. Thus, anadromous-cataloging work in upstream target streams will also benefit the coastal environment.

Information needs for oil and gas development include characterization of the affected environment. This project will provide information to assess the effects of oil and gas development on fishery resources and to develop mitigation strategies. Explicit knowledge of the distribution of anadromous fish is essential to initiate the state fish habitat permitting process. Furthermore, since Essential Fish Habitat (EFH) for Alaska stocks of Pacific salmon is identified by reference to the AWC, this project will provide information necessary for EFH assessment for oil and gas development activities.

MEASUREABLE GOALS AND OBJECTIVES

Objective 1: To complete a baseline inventory, using established protocols, of fish (with emphasis on anadromous fish) distribution in Bristol Bay and Cook Inlet-Shelikof Strait drainages.

> *Measureable outcome 1:* This inventory will result in more complete AWC coverage. Measureable additions to the AWC will include: 1) the amount of stream length (from new or extended AWC streams) added to the AWC; 2) the number of AWC nominations resulting in newly documented anadromous fish species or life stages in previously cataloged AWC streams.

Objective 2: To record characteristics, using established protocols, of aquatic and riparian habitats at each sampling location.

> *Measureable outcome 1:* Habitat characteristics are documented at 100% of fish collection sites.

Annual outcomes will include:

- Study sites to be sampled from each year's study area will include at least 1 study site within: each non-AWC-cataloged wadable stream draining at least 50 square kilometers, (sq km); each non-AWC-cataloged raftable stream draining at least 200 sq km; and each navigable river draining at least 1500 sq km. No study sites will be located upstream of obvious barriers to all upstream-migrating anadromous fishes.
- All water bodies from which anadromous fish are observed will be nominated for listing in the AWC (available online at http://www.sf.adfg.state.ak.us/SARR/awc/) following each annual field season.
- Complete results will be entered into the AFFI database (AFFID), and posted on the AFFID internet mapping service website at http://www.sf.adfg.state.ak.us/SARR/Surveys/index.cfm following each year's fieldwork.
- An annual technical report describing project methods and results will prepared.
- Reporting requirements of the CIAP program will be met by the specified deadlines.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is most consistent with CIAP Authorized Use 1: *Projects and activities for the conservation, protection, or restoration of coastal areas.* Cataloging anadromous water bodies adjacent to MMS's North Aleutian Basin and Cook Inlet-Shelikof Strait planning areas will proactively provide statutory protection for freshwater habitats used by anadromous fishes likely to be affected by oil and gas development in this region.

Numerous possibilities exist for future oil and gas development in the proposed study area. The MMS is evaluating Oil and Gas Lease Sale 214, North Aleutian Basin, as part of the Outer Continental Shelf Oil and Gas Leasing Program, 2007-2012. Furthermore, 2 potential State-offered lease sales (Cook Inlet and Alaska Peninsula area wide lease sales) in the proposed study area may provide additional development opportunity.

For effective protection of sustainable anadromous fish populations in Alaska, it is crucial that the extent of anadromous fish habitat is explicitly documented. Alaska Statute 16.05.871 (The Anadromous Fish Act) constitutes Alaska's strongest and most comprehensive fish habitat protection standard. However, the Anadromous Fish Act, and over 300 other federal, state, and local government policies that protect anadromous fish habitats in Alaska, only apply to portions of water bodies that are listed in the AWC. In the vastness of Alaska, only a fraction of habitats used by anadromous fish have been documented. Until these habitats are inventoried, protection standards cannot be applied.

Since the home range of anadromous fishes spans natal freshwaters and estuarine and marine waters, all anadromous fishes from throughout the study area spend extended periods in waters of Bristol Bay, Shelikof Strait, or Cook Inlet, which are likely to be impacted by offshore oil and gas development activities. Impacts to fish habitats in freshwaters adjacent to onshore oil and gas extraction, processing, and transportation facilities are also likely to occur. Baseline inventories of anadromous fish habitats are needed in order for ADF&G and other entities to protect anadromous fish habitats in this region.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Federal conservation units (e.g., national parks and wildlife refuges, and wilderness areas on U.S. Forest Service lands) are excluded from the proposed study area (see Figure 1, attached), which will minimize the potential for duplicating fish inventory efforts. Nevertheless, since federal agencies may be involved in fish inventory projects outside of conservation units, we will coordinate closely with federal fisheries biologists to avoid potential duplication of effort, and to seek opportunities for collaboration. Multiple federal collaborators (e.g., BLM, USFWS, NPS) have supported similar AFFI projects in recent years, and may potentially provide complementary support for project planning and field operations, depending on the proximity of each year's selected study area to federal lands.

COST SHARING OR MATCHING OF FUNDS

No CIAP funds will be used for cost sharing or matching.

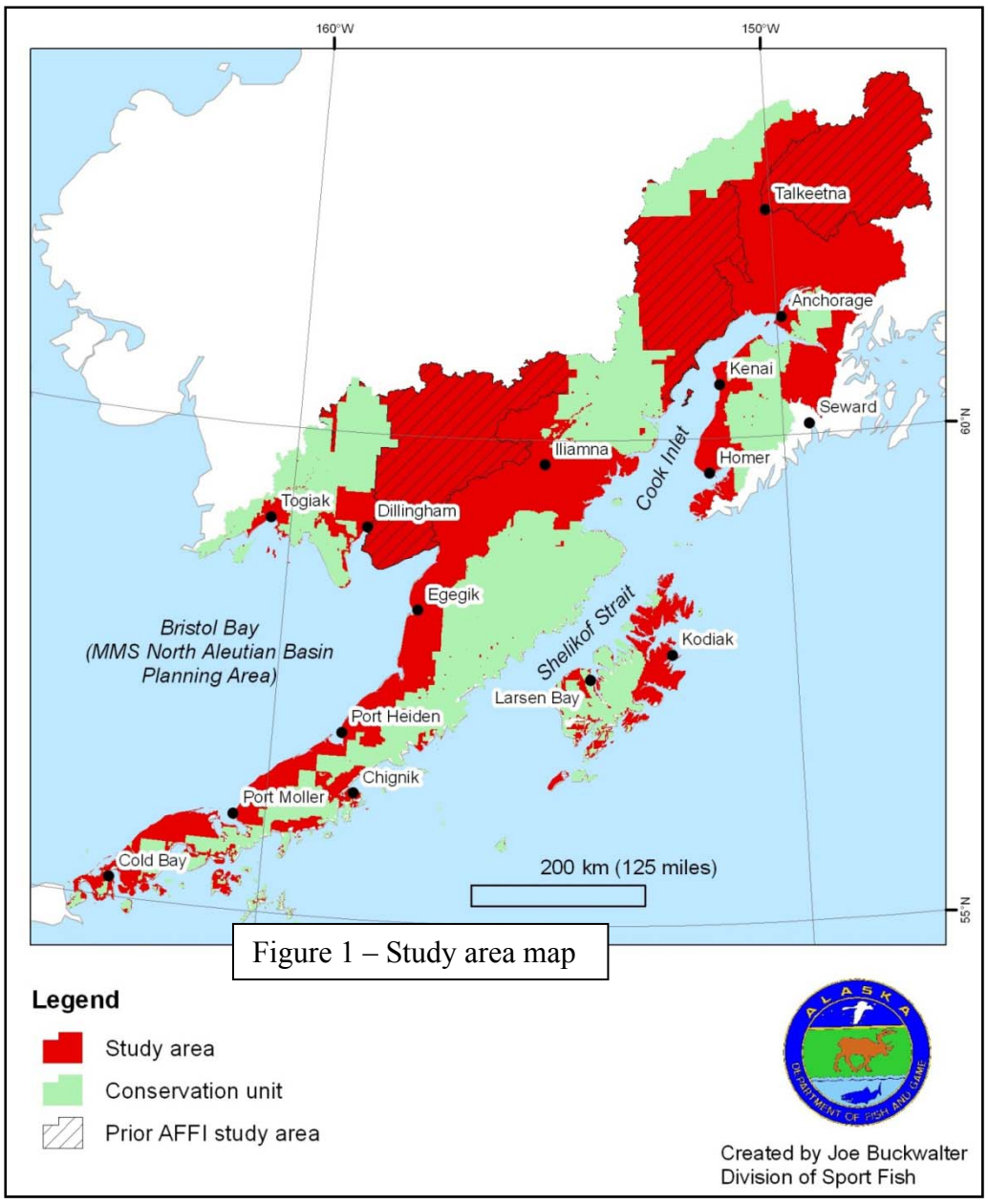

Figure 1 – Study area map

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game, Division of Habitat

PROJECT TITLE: Subsistence Fish Surveys and Life History Research – Chipp/Ikpikpuk, Topagoruk, Meade and Inaru River Drainages

PROJECT CONTACT

Contact Name: William Morris
Address: ADF&G, Division of Habitat, 1300 College Road, Fairbanks, AK 99701
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Fax Number: (907) 459-7303
Email Address: william.morris@alaska.gov

PROJECT LOCATION

Fish sampling sites will be established in as many of the following rivers and/or their tributaries as possible; lake sampling also may be conducted:
Chipp River, Ikpikpuk River, Topagoruk River, Meade River, Inaru River. See attached map. Radiotracking of tagged fish likely will include numerous other rivers within the region as tagged fish disperse.

PROJECT DURATION

Project duration is proposed to be 4 years. Fish sampling will occur during years 1 and 2. Year 3 field work will be limited to radio tracking flights to provide relocation data on fish tagged in years 1 and 2. Data analysis and technical reports will be finalized in year 4.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
858,900	431,700	306,400.	90,000	30,800

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
858,900	0	0	858,900	0

PROJECT DESCRIPTION

Cooperative fish studies that involve the North Slope Borough, Alaska Department of Fish and Game (ADF&G), Bureau of Land Management (BLM) (2004-present), MJM Research LLC, ConocoPhillips Alaska, Inc. (2001-2004) and ABR Alaska, Inc. (2003-present) have been designed to be repeatable and to measure metrics of subsistence fish populations in the National Petroleum Reserve Alaska (NPR-A) (sex, age, size/age at maturity, etc). Much of this proposed

work is designed to continue the work described below into new areas (Moulton et al. 2007, Morris et al. 2006, Morris 2003).
Work, funded through North Slope Borough authorized CIAP grants, began in 2001 in the Fish Creek drainage, and has progressed to the Teshekpuk Lake region of the NPR-A including the Ikpikpuk, Chipp, and Meade rivers. Funding for this work ends in State FY09 (June 30, 2009). Additional sampling is needed throughout this region to further define fish use of various habitats and to document current population structures of various species. Broad whitefish have been the main fish species of focus as the species is most heavily harvested on the North Slope by subsistence fishers. However, population structure data have been collected for numerous species. Radio telemetry has been used to document seasonal movements of broad whitefish, summering in the Prudhoe Bay area, Kuparuk oil field, Fish Creek drainage, and the Teshekpuk Lake outlet area, to critical spawning, wintering and feeding/rearing habitats. These studies have been progressing westerly through NPR-A since 2001. This proposal is to continue this basic program in the major drainages and smaller lake systems of the area west of Teshekpuk Lake (Chipp, Ikpikpuk, Topagoruk, Meade, Inaru Rivers and some of their tributaries). The area is heavily depended on by subsistence fishers and appears to support the most significant population of broad whitefish on the North Slope. All of the work completed to date, and future work proposed for this study, is repeatable and provides a baseline to investigate future changes in fish populations and fish life history characteristics in response to oil and gas development or natural changes in the environment. These studies will collect and synthesize fish population structure data for all species encountered in adequate numbers to provide a valuable data set. Methods used will be easily repeatable, hence providing an excellent dataset for future comparisons.

Funding for continuation into other areas heavily depended on by subsistence users and already leased for oil and gas exploration is needed. Sampling would be conducted from field camps twice per open water season, focusing on one main sampling area in a drainage per year or possibly per sample event over the course of the study. This work is proposed for two sample years with an additional season required to complete radio tracking with reports being finalized during year 4. All sampling will follow set procedures outlined in the publications associated with this ongoing work. Radio tracking will be conducted during times appropriate to identify spawning, wintering, and summer rearing habitats as well as to identify periods of migration.

Basic water quality data (dissolved oxygen, specific conductance, pH and water temperature) will be collected daily at all sample sites. Chlorophyll a and qualitative aquatic invertebrate samples will be part of the data collection at all sample sites sampled for periods in excess of one week during each sampling period. These data will provide a baseline data set for these metrics, and be comparable to data collected during the previous studies. Invertebrate samples may be preserved and stored for future detailed analysis.

- Basic fish life history and population structure data are lacking for much of the proposed study area, although the area is of particular importance to subsistence fishers and portions have been leased for oil and gas exploration. This research will directly address this information gap and provide the necessary data to appropriately protect important fish habitats a) by identifying fish species using the waters within the region and b) by indentifying critical habitats used by key subsistence fish species (predominantly broad

whitefish in this area). The radio telemetry portion of this study will be particularly useful in identifying the timing of seasonal movements and indentifying habitats used during different seasons. Multi-species population structure data from each area sampled will provide baseline population metrics for all future comparisons.

- This study will provide a data set amenable to direct comparison to future data collected regarding environmental or industrial stressor effects on area fish populations. The work will be directly relevant to State, Local and Federal agencies for analyzing and reviewing development proposals for the region. Data will be such that it can be directly applied to management decisions related to fish and fish habitat management. Data will be provided to industry in a timely manner allowing industrial entities to use these data to aid in design and routing of development infrastructure to minimize or avoid impacts to subsistence fish species and their habitat. The Bureau of Land Management, Arctic Team, and North Slope Borough Wildlife Department will be cooperators in this work. The project addresses CIAP Authorized Use 1 - Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands and Authorized Use 2 - mitigation of damage to fish, wildlife, or natural resources in providing the necessary data to make assessments of future risks to fish and or damage to their habitats. The project will contribute to any future comprehensive management plan for the North Slope as in Authorized Use 4. In addition, the proposal also meets theme 2 b, as identified in the State's CIAP grant process—Collection and/or analysis of baseline data on fish and wildlife and/or their habitat that is needed to evaluate or develop mitigation strategies for potential impacts from oil and gas, mining, and other development activities.

- This project is strongly based on cooperative partnerships with local entities and Federal agencies. Annual meetings will be held to address specifics of previous year's work and to outline the upcoming year's work. Past performance of similar studies in other areas has been excellent and community support has been consistent. Based on results and acceptance of results from our previous work on the North Slope there is high likelihood of data being successfully used to mitigate impacts from oil and gas exploration and development, as has been the case with previous work. Data will provide a baseline data set, following procedures already established. Survey areas are heavily depended on by subsistence users and are already leased for oil and gas exploration.

- Much of this work is directly tailored to meet the stated needs of local North Slope entities representing subsistence users from across the North Slope. Data will be directly relevant to North Slope communities by providing data required for proper fish resource management. Benefits will be long lasting because methods used and metrics obtained will be easily repeatable making future assessments of area fish populations straight forward and directly comparable. Broader applicability of results to other portions of the state largely would be restricted to aquatic system comparisons on the North Slope whereby it is possible that inferences from study streams could be made for other similar streams not in the study.

- All results from this study will be transmitted in interim and Technical Reports to State, Federal and North Slope Borough agencies as well as to the funding agency. Additionally, we will transmit data to local communities via presentations at various meetings such as Subsistence Oversight Panel, Fish and Game Advisory and Regional Advisory Council meetings. All nominations to the Anadromous Waters Catalog (see Goals and Objectives) will be available to all entities including the public and resource managers.

MEASUREABLE GOALS AND OBJECTIVES

An ADF&G, Division of Habitat, Technical Report will be completed after completion of the study. In this case, a final technical report would be compiled during year 4 of the project once all data are compiled and analyzed. Depending on final results it is possible that several individual Technical Reports would be prepared, likely organized by drainage. Technical Reports will be published to our website and furnished to the State Library and the funding agency. Contractor reports will also be submitted to our office and will be submitted to the funding agency and placed on our website for public access. Reports will summarize all data collected.

Additionally, interim reports will be produced and submitted to all interested agencies and organizations annually to transmit that year's data. Production and submittal of interim, Technical and contractor reports will fulfill our goal of ensuring that information collected will be available to resource managers, industry and the public in a timely manner. Additionally, fish distribution data collected will be prepared and submitted for inclusion in the Anadromous Waters Catalog, the basis for State of Alaska fish habitat permitting under AS16.05.871, and the Fish Distribution Database if appropriate. Nominations to the catalog will occur annually as fish data and radio tracking data are synthesized.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

The project addresses CIAP Authorized Use 1 – *Projects and activities for the conservation, protection, or restoration of coastal areas including wetlands* by providing the necessary data to make assessments of future risks to fish and or damage to their habitats. Currently these data are lacking in the proposed study area. The work will be directly relevant to State, Local and Federal agencies for analyzing and reviewing development proposals for the region and ensuring that the fish habitat is protected. Data will be such that it can be directly applied to management decisions related to fish and fish habitat management and oil and gas development by providing fish species habitat use and seasonal patterns of habitat use data that are currently not available for vast areas of this region. We will identify broad whitefish spawning and wintering areas, two of the most critical habitat types for fish in the Arctic and also the most susceptible to perturbation through development activities. Proper protection of these subsistence resources can then be accomplished during development of the area through incorporation of these data in oil field and exploration program design and appropriate mitigation measures.

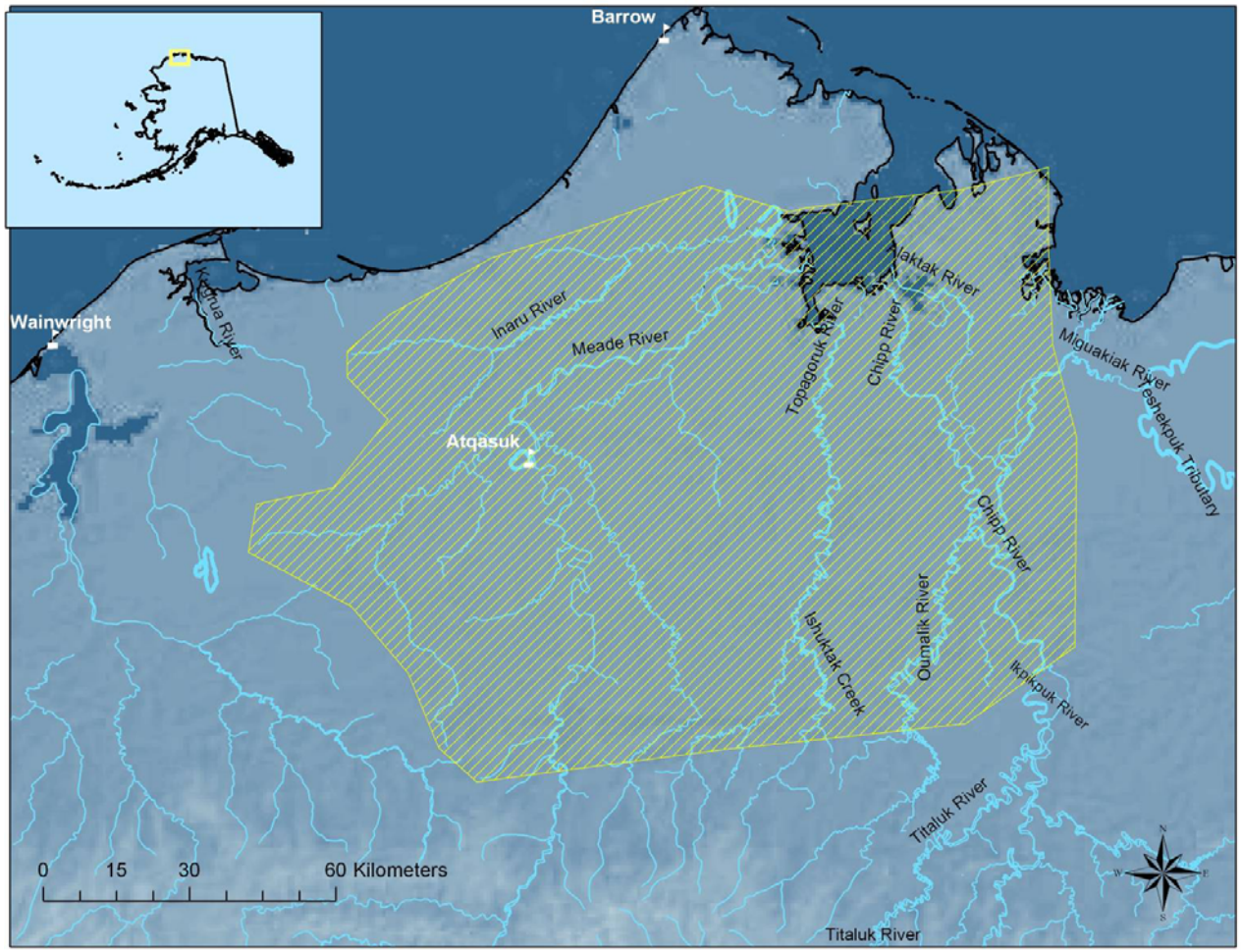
COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The North Slope Borough Department of Wildlife Management (DWM) and the Division of Habitat have been involved in similar collaborative research on the North Slope since 2001. This study is largely a continuation of the same type of research into new areas used by subsistence

harvesters and leased for oil and gas exploration. The North Slope Borough DWM has indicated their support of this project (letter attached). Similarly, the Bureau of Land Management, Arctic Team has also been involved with these efforts and will continue to be involved as the project moves into new areas (letter of support attached). ConocoPhillips Alaska, Inc., also provided significant logistical support for the study during 2001 through 2004. ConocoPhillips Alaska, Inc., has indicated their strong support of this proposed project (letter attached). We have also consulted with the United States Fish and Wildlife Service and they have indicated that this type of work is invaluable to fish resource management and they have indicated their support for this project and have further indicated their interest in partnering opportunities (letter attached).

COST SHARING OR MATCHING OF FUNDS

We do not intend to use CIAP funds for cost sharing or matching.



Map 2. Project sampling/study area. Fish sampling would be conducted in numerous rivers, streams and lakes with yellow cross-hatched area depicted on the map. Aerial surveys flown to relocate radio tagged fish will likely extend outside the area depicted.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Arctic Field Office
1150 University Avenue
Fairbanks, Alaska 99709-3844
http://www.blm.gov/ak

TAKE PRIDE IN AMERICA

Bill Morris, Habitat Biologist
Division of Habitat
Alaska Department of Fish & Game
1300 College Rd Fairbanks, AK 99701-1599

Dear Mr. Morris:

The BLM Arctic Field Office is pleased to write this letter of support for your proposed project entitled *Subsistence Fish Surveys and Life History Research – Chipp/Ikpikpuk, Topagoruk, Meade, and Inaru river drainages,* submitted for funding to the Coastal Impact Assistance Program by the Alaska Department of Fish and Game, Division of Habitat. One of the challenges that we face in managing oil and gas exploration and development in the National Petroleum Reserve-Alaska (NPR-A) is the lack of current and relevant fish distribution data for river systems both in and adjacent to the reserve. This project would provide much needed information that would be used by the BLM in future land use planning, permitting, and environmental reviews, furthering our ability to responsibly develop oil and gas resources in the NPR-A.

The Division of Habitat has a proven track record of disseminating information on a timely basis through their Technical Report Series. Their past research is used extensively by the BLM to analyze potential impacts to fish populations and fish habitat from proposed oil and gas activities and to develop protective measures to mitigate these impacts. The Chipp/Ikpikpuk, Topagoruk, Meade, and Inaru rivers are highly utilized for the subsistence fish harvest that occurs in the NPR-A and continued research and monitoring is needed to provide a better understanding of harvest characteristics and life history traits. The new or updated information that would result from this proposed project will be immediately useful and will establish the knowledge base for management decisions well into the future. Ultimately, it will provide data that will help advance the environmental management goals of both the State and Federal governments in Alaska.

Sincerely,

Dave Yokel, acting
Lon Kelly, Manager
Arctic Field Office

Note: Additional letters of support regarding this project are included in Project #19.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game
Division of Wildlife Conservation

PROJECT TITLE: Hydrocarbon Contaminant Assessment of Pribilof Island Rock Sandpipers in Cook Inlet

PROJECT CONTACT

Contact Name: Sadie Wright
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Telephone Number: (907) 465-6197
Fax Number: (907) 465-6142
E-Mail Address: sadie.wright@alaska.gov

PROJECT LOCATION

Cook Inlet and St. Paul, Pribilof Islands

PROJECT DURATION

2 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
136,400	71,400	65,000	0	0

Funding Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
136,400	0	0	136,400	0

PROJECT DESCRIPTION

Assessing background levels of hydrocarbon contamination in Pribilof Island Rock Sandpipers in Cook Inlet is needed to determine possible impacts of additional oil development in this region. Almost the entire world population of Pribilof Island Rock Sandpipers overwinters along Cook Inlet's mud and sand flats, feeding on tiny clams and invertebrates exposed by the shifting ice floes. This puts these birds at serious risk of exposure to contaminants and oil spills. Cook Inlet is an area with existing oil and gas development and high marine vessel activity which may result in inadvertent spills or discharge (see 01.15.09 M/V Monarch sinking: http://community.adn.com/node/136657, http://www.peninsulaclarion.com/stories/080709/new_476849375.shtml).

This two year study includes capturing Pribilof Island Rock Sandpipers in Cook Inlet in the winter, banding them, and collecting blood for contaminant analysis. Prey will be collected from the beach substrate for subsequent contaminant analysis. Semi permeable membrane devices will be deployed on the mud flats of Cook Inlet to measure hydrocarbon levels in this environment.

Survival of sensitive species may be impaired by contaminants such as petroleum hydrocarbons. An oil-vulnerability index created by King and Sangar (1971) ranked the Rock Sandpiper as the second highest among all North American shorebirds. One Conservation Action identified by the Alaska Comprehensive Wildlife Conservation Strategy for the Rock Sandpiper is "*Evaluate potential direct and indirect impacts from oil and gas development, including assessing the background levels of hydrocarbon contaminants in birds and their prey in Cook Inlet*."

Control samples will be collected from Pribilof Island Rock Sandpipers on their breeding grounds on St. Paul Island in August following the winter captures. Differences in hydrocarbon levels in the blood from the Cook Inlet and St. Paul birds will be ascertained. Birds will be resighted whenever possible to determine if study birds are surviving. In addition to our own resighting efforts, local Pribilof ecotour guides, Federal biologists (i.e., USGS and USFWS), and Aleut Tribal biologists could be contacted to aid the resighting effort. Biologists conducting work on the Alaska Peninsula will be made aware of our banding effort, and asked to report any Rock Sandpiper band observations in that region.

The Project Contact will continue to work closely with USGS biologists to coordinate helicopter transportation in Cook Inlet to ensure that the helicopter is full of researchers in order to maximize data collection.

The Pribilof Island Rock Sandpiper is featured in Alaska's Comprehensive Wildlife Conservation Strategy, a federally-approved plan that outlines conservation needs for Alaska's species of greatest conservation need. This proposed project achieves a number of the conservation actions identified in the Conservation Action Plan in the CWCS (Appendix 4, pages 522-523). http://www.sf.adfg.state.ak.us/statewide/ngplan/

This endemic subspecies is not yet a candidate for listing as threatened or endangered under the Federal Endangered Species Act, therefore it is ineligible for various sources of Federal funding. Coastal Impact Assessment Program funding may be the only opportunity for this study to be funded and these CWCS conservation actions to be achieved.

MEASURABLE GOALS AND OBJECTIVES

Year 1:

- Identify areas in Cook Inlet with high use by wintering Pribilof Island Rock Sandpipers.
- Winter Cook Inlet capture session: capture birds, collect samples, and band individuals (sample size ≈ 15).
  - ✓ Deploy and retrieve semipermeable membrane devices.
  - ✓ Send samples to the lab for contaminant analysis.
- Summer St. Paul Island capture session: capture birds, collect samples, and band individuals (sample size ≈ 15).
  - ✓ Deploy and retrieve semipermeable membrane devices.

  - ✓ Send samples to the lab for contaminant analysis.
- Conduct band resight effort on the breeding grounds.
  - ✓ Work with local ecotour guides and Aleut Tribal biologists to enlist their assistance in the resight effort.
- Produce a report outlining number of birds sampled and banded, locations of capture and resight observations, and results of analysis to date. Distribute to all interested parties.

Year 2:

- Second banding and sampling effort at Cook Inlet wintering grounds (sample size ≈ 15 individuals).
  - ✓ Deploy and retrieve semipermeable membrane devices.
  - ✓ Send samples to the lab for contaminant analysis.
- Resight individuals on the wintering grounds.
- Second banding and sampling effort on the breeding grounds (sample size ≈ 15 individuals).
  - ✓ Deploy and retrieve semipermeable membrane devices.
  - ✓ Send samples to the lab for contaminant analysis.
- Conduct band resight effort on the breeding grounds.
  - ✓ Work with local ecotour guides and Aleut Tribal biologists to enlist their assistance in the resight effort.
- Produce a final report in manuscript format detailing number of birds sampled and banded, locations of capture and resight observations, and results of analysis.
- Submit a manuscript to a peer-reviewed journal for publication.
- Present results at professional conferences (e.g. Alaska Shorebird Group Conference).

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project fits under CIAP authorized use #1, *Projects and Activities for the Conservation, Protection, and Restoration of Coastal areas, including wetlands.*

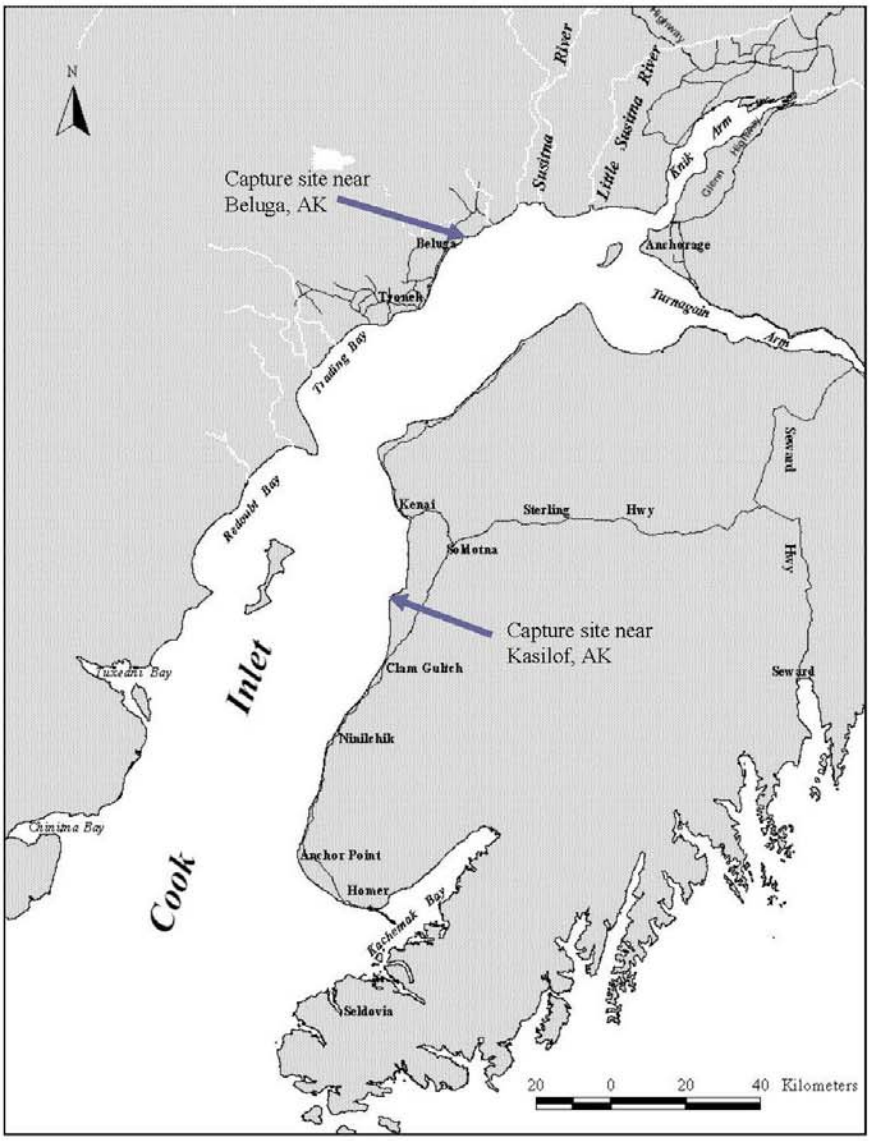
This study will provide managers with information needed to mitigate for the impacts of oil and gas development (e.g., habitat contamination, increased risk of oil and rat spills, increased human traffic). These data can be utilized as baseline information to effectively assess the impacts of potential future spill disasters and develop appropriate mitigation measures to protect the wintering habitat of the Pribilof Island Rock Sandpipers. Basic baseline information for Pribilof Island Rock Sandpipers does not yet exist. This knowledge gap was made even more evident with the January 15, 2009 sinking of the M/V Monarch in Cook Inlet. Over 12,000 gallons of diesel fuel and lube oil were released into Cook Inlet when the M/V Monarch sank this winter. Increased motor vessel activity in this region may increase the risk of future oil spills.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The Project Contact has met with USGS shorebirds biologists to determine research and funding gaps for the Pribilof Island Rock Sandpiper. The Project Contact will coordinate closely with U.S. Geological Survey biologists to ensure further collaboration and synergy between agencies to increase the benefits for the Rock Sandpiper.

COST SHARING OR MATCHING OF FUNDS

The Project Contact intends to coordinate with USGS researchers working in Cook Inlet to share helicopter transportation to ensure that the helicopter is fully utilized to maximize data collection. CIAP funds will not be used for matching purposes.



Rock Sandpiper Capture Sites

- Capture sites near the towns of Beluga and Kasilof, Alaska will provide us with access to birds at locations with potentially differing hydrocarbon levels.

Photos taken by Dan Ruthrauff on the mudflats near Kasilof, Alaska.

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
ALASKA SCIENCE CENTER
4210 University Dr.
Anchorage, AK 99508
January 28, 2009

To Whom It May Concern:

This letter is in support of Sadie Wright's Coastal Impact Assistance Program proposal, "Hydrocarbon Contaminant Assessment of Pribilof Island Rock Sandpipers in Cook Inlet". I have been consulting with Ms. Wright on this project, and believe that the project fills critical information gaps concerning the status of the Pribilof Island Rock Sandpiper in upper Cook Inlet. Not only does the project address important conservation needs, but the project addresses topics that satisfy many of CIAP's funding directives.

As Ms. Wright's proposal details, the Pribilof Island Rock Sandpiper is one of upper Cook Inlet's most numerous wildlife species during winter, and their surprising and recent discovery has identified serious knowledge gaps concerning their winter distribution. These knowledge gaps preclude effective conservation planning in the event of impacts due to oil or gas developments in the region. Ms. Wright proposes collecting valuable baseline information on hydrocarbon exposure, and this information complements our on-going efforts to better understand the behavioral and physiological foundation of their non-breeding distribution. It is my hope that Ms. Wright's proposal is funded in order to help address conservation needs for this uniquely Alaskan natural resource.

Sincerely,

Daniel Ruthrauff
Wildlife Biologist
U.S. Geological Survey – Alaska Science Center

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Environmental Conservation
Division of Environmental Health

PROJECT TITLE: Development of Inventory/Action Plans for Pollution from Eroding Contaminated Sites, Landfills, and Dumps

PROJECT CONTACT

Contact Name: Kristin Ryan
Address: 555 Cordova; Anchorage Alaska 99501
Telephone Number: (907) 269-7644
Fax Number: (907) 269-7654
Email Address: kristin.ryan@alaska.gov

PROJECT LOCATION

The project area encompasses the coastal and river delta areas of the western and Arctic coast of Alaska, from Unalaska to the Canadian border (see attached map), with a focus on developed areas surrounding villages and industrial areas.

PROJECT DURATION

Four (4) years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$1,400,000	$350,000	$450,000	$400,000	$200,000

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
1,400,000	0	0	1,400,000	0

PROJECT DESCRIPTION

There are numerous contaminated sites, landfills and unauthorized dumping areas in coastal areas that release or have the potential to release hazardous substances and debris into marine environments. This project will inventory and characterize those sites. Sites will be evaluated and ranked based on erosion potential, type of release, potential to damage sensitive marine environments (such as marine estuaries) and potential contaminant pathways to humans and the environment. The project includes assessment of possible corrective or mitigation actions.

Climate change is accelerating coastal and river erosion, causing releases of hazardous substances from eroding contaminated sites, landfills, and unauthorized dumps. These hazardous

substances came from industrial activities -- such as Department of Defense industrial activities using polychlorinated biphenyls (PCBs) and chlorinated solvents; petroleum from fuel tanks and containers; and debris, waste, and leachate from landfills and unauthorized dumping areas. Many Alaskan villages have poorly managed landfills or use unpermitted dumping areas. All of these source areas release contaminants into Alaska's rivers and oceans that damage vital natural resources or sensitive environments, such as marine estuaries. Waste from eroding landfills and unauthorized dumps create safety hazards for navigation, wildlife, and birds. (See attached photos)

Alaska's coastline and rivers are the transportation links throughout the state. None of the communities in the proposed project area are connected by highway to the rest of the state. Coastal villages are accessible only by boat or airplane. Barges bring in most supplies, during the short ice-free periods each year. Since the 1800s, mining and marine industries have utilized Alaska coastal areas for staging projects and construction.

During World War II (WWII), remote Alaska became the United State's first line of defense as Japan occupied the eastern islands of the Aleutians (Kiska and Attu). WWII projects were built to defend the nation in remote areas of Alaska. Alaska had further military buildup during the Cold War, when military communications and radar stations were constructed in many remote areas. These facilities used hazardous chemicals now banned, such as PCBs and certain pesticides, and used disposal practices common at the time but now illegal. Leaks of fuels stored at these facilities were chronic.

In the mid-1900s, oil and gas exploration came to Alaska. During this development, which occurred mostly prior to Statehood, permitting or environmental regulations did not exist—waste from these industrial activities were deposited in the most convenient location, with little consideration of impacts to the environment. Many of these sites are not in the ADEC Contaminated Sites database. With increasing climate change, these sites may be subject to erosion causing releases of hazardous substances and petroleum. As the changing climate raises land temperatures, permanently frozen subsoil, or permafrost, has begun to melt. Landfills, dumps and buried contamination that were once thought to remain frozen have begun to melt, increasing the spread of contamination to land and to marine environments.

ADEC's Contaminated Sites Program (CSP) and Solid Waste Program (SW) together have received reports of dumpsites and other sources of marine contamination but have little documentation on them. There is no program within the department to incur the costly travel costs to these remote areas, assess the problem, learn the site history, and confirm contamination through sampling unless there is a viable responsible party conducting an investigation as a first step toward cleanup. This project would provide great help in assessing the magnitude of the impacts to the marine and upland environment by providing the means to travel to the sites, find out information from residents, and from research using other resources. ADEC will involve local residents, landfill operators, and local and regional tribal entities to ultimately help find ways to prevent contaminants from entering marine waters.

The CSP keeps a database of open and closed contaminated sites throughout the state, listing 2,422 open sites and 4,099 closed as of the end of June 2008. Reporting is the primary way new

sites come to the program, and they are entered on the database if there is sufficient indication of contamination. The department has never had staff to seek out sites for a comprehensive inventory. Management efforts since the early 1990s have focused instead on prioritizing sites to best protect public health and the environment with limited staff time and funds. The CSP has in the past several years enhanced its tool to evaluate sites. The new Exposure Tracking Model incorporates the elements of known or potential exposure and current or future exposure. It is this tool that will be used to evaluate eroding sites, shaping future efforts to seek funding for remediation.

The CSP has worked with the U.S. Department of Defense and other federal civilian agencies for over a decade to address current and former contamination related to military operations, as well as federal airports, schools, and transportation facilities. Since 2002, ADEC has raised the issue of eroding landfills and had some success in developing an inventory as well as making plans for remediation in this subset of all eroding contaminated areas in the state. Insufficient data to demonstrate high levels of hazardous substances have kept many of these landfills from receiving funding, however. The military has strict legal parameters surrounding which of these sites they can direct funds to, and funding for cleanup of debris sites with undocumented contamination is of very low priority or non-existent.

The coastal areas of this project have approximately 95 – 100 villages that have little infrastructure. Villages in rural Alaska are almost all unincorporated, and therefore have no tax base. A tribal government is often the only local government, and jobs are quite scarce. Many of these villages lack a permitted landfill or have little knowledge to operate their landfills properly. These villages may have one or more historic dumping areas that are not properly closed. Due to the coastal location, many of these village landfills are located in or adjacent to wetlands, rivers, or shorelines. Many of these village dumps are subject to erosion. Wastes and associated leachate from these eroding landfills are impacting Alaska's waters, wetlands and sensitive marine environments. Some communities lack modern sewer systems and use "honey buckets" for their sewage that are placed in these landfills.

The SWP has determined that in many cases, the actual environmental risk posed by a landfill is heavily influenced by its location. For this reason, the SWP developed the Landfill Location Risk Calculator (LLRC), which evaluates locational risks, including proximity to drinking water, erosion potential, potential impacts to sensitive environments, and potential impacts to wildlife. The LLRC is intended to be used to both evaluate environmental risk factors from existing landfills, and to evaluate locations of proposed landfills near a village that minimizes these locational risk factors. In this project, the LLRC will be used to evaluate existing landfills in each village, and may also be used to evaluate alternative sites in areas where mitigation is proposed because the landfill is determined to be at very high risk of erosion.

The SWP has a database that tracks location information, design information, permit status, inspection results, and other information for active landfills, and many closed landfills in Alaska. For landfills in rural Alaska, this information is incomplete for many facilities, including many of the villages in the coastal area that is the focus of this project. This project will enable the SWP to dramatically improve the quality of data for these villages in the database.

MEASURABLE GOALS AND OBJECTIVES

- **GOAL: Develop an inventory of contaminated sites, landfills, and dumps in Western / Arctic coastal Alaska, including evaluation of risks from those sites subject to erosion.** This will include an evaluation of the risks from contamination via CSP Exposure Tracking Model. (year 1 through year 4)

    - **OBJECTIVE: Evaluate approximately 95 to 100 village landfills**. This information would be used by ADEC and villages to prioritize landfill improvements and relocation to halt waste releases from eroding or poorly located village landfills. (year 2 through year 4). It can also be used to identify landfill management changes that will help minimize the environmental risk posed by the landfill.
    - **OBJECTIVE: Populate the database to produce a GIS map containing multiple layers of information** such as locations of contaminated sites and landfill locations. (year 4)

- **GOAL: Establish the priority for corrective action and evaluate possible corrective or mitigation actions at these sites**.

    - **OBJECTIVE: List eroding contaminated sites and landfills that require immediate action and which ones require planning for near future actions** (~2 to 5 years) **or should be monitored for possible future erosion**. (year 1 through year 4)

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with #1 of the authorized uses, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* This project will provide the information necessary for efforts that ultimately will reduce contamination releases from contaminated sites, landfills, and dumps that are damaging sensitive marine environments, wetlands, rivers, and Alaska's tidelands. This project will assist remote rural communities to manage and locate their landfills to reduce waste and pollution releases. As these landfills, dumps and contaminated sites are cleaned up, the environment will be improved and restoration of habitat will be achieved.

Data which would indicate the magnitude of the problem seldom exists. The CSP has clear evidence, however, that historic landfills near places of military and transportation activities, and exploration and mining operations very likely may have PCBs, chlorinated solvents, metal compounds and pesticides as well as other waste-related contaminants. Many of these compounds can bioaccumulate in the food chain. Coastal communities and facilities with fuel storage tanks commonly have had leaks of petroleum compounds. Unfortunately, water quality monitoring and other kinds of testing is seldom done unless a local group takes interest in a watershed or when a party responsible for a contaminated site steps forward and conducts site assessment. Eroding dumps, however, provide much visual evidence of harm by the volume of trash, plastic, barrels and sheen on water. The harm to water resources, plants, and animals remains largely undocumented.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

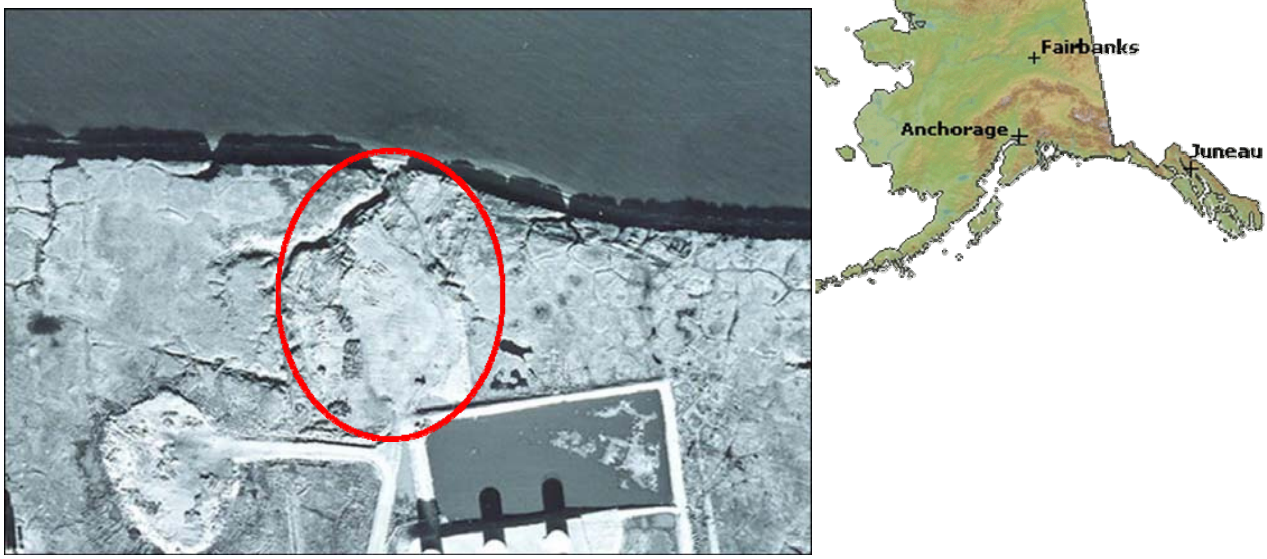
- Federal Agencies—multiple agencies will be involved. Below are examples:
    - Environmental Protection Agency (including coordination with EPA's tribal grant program, IGAP, and EPA's Brownfield Program)
    - U.S. Department of Defense (DOD) - the CSP has been working with DOD on eroding landfills owned by the military and is making some progress.
    - Federal Aviation Administration – CSP is also working with this federal civilian agency on some eroding historic landfills.
    - Alaska Army National Guard with links to 76 rural Alaskan communities
    - U.S. Department of Interior (US Fish and Wildlife, Bureau of Land Management)

COST SHARING OR MATCHING OF FUNDS

This project has no cost sharing or matching funds associated with it.

Project area: Coastal western and arctic Alaska, from Unalaska north to the Canadian border.

Photos of Eroding Landfills in Alaska



Former Barter Island Distant Early Warning site, part of the nation's defense system during the Cold War, beginning in the 1950s. This landfill, on the Arctic coast, along the Beaufort Sea, was sufficiently far from the shore in 1984.

In 19 years, the sea eroded over 150 feet, exposing the toe to the ocean, shown in this 2003 photo.

Erosion control measures at Barter Island have proven costly and fruitless. Shown above are bank stabilization techniques employed in 2000 washing away in 2006.

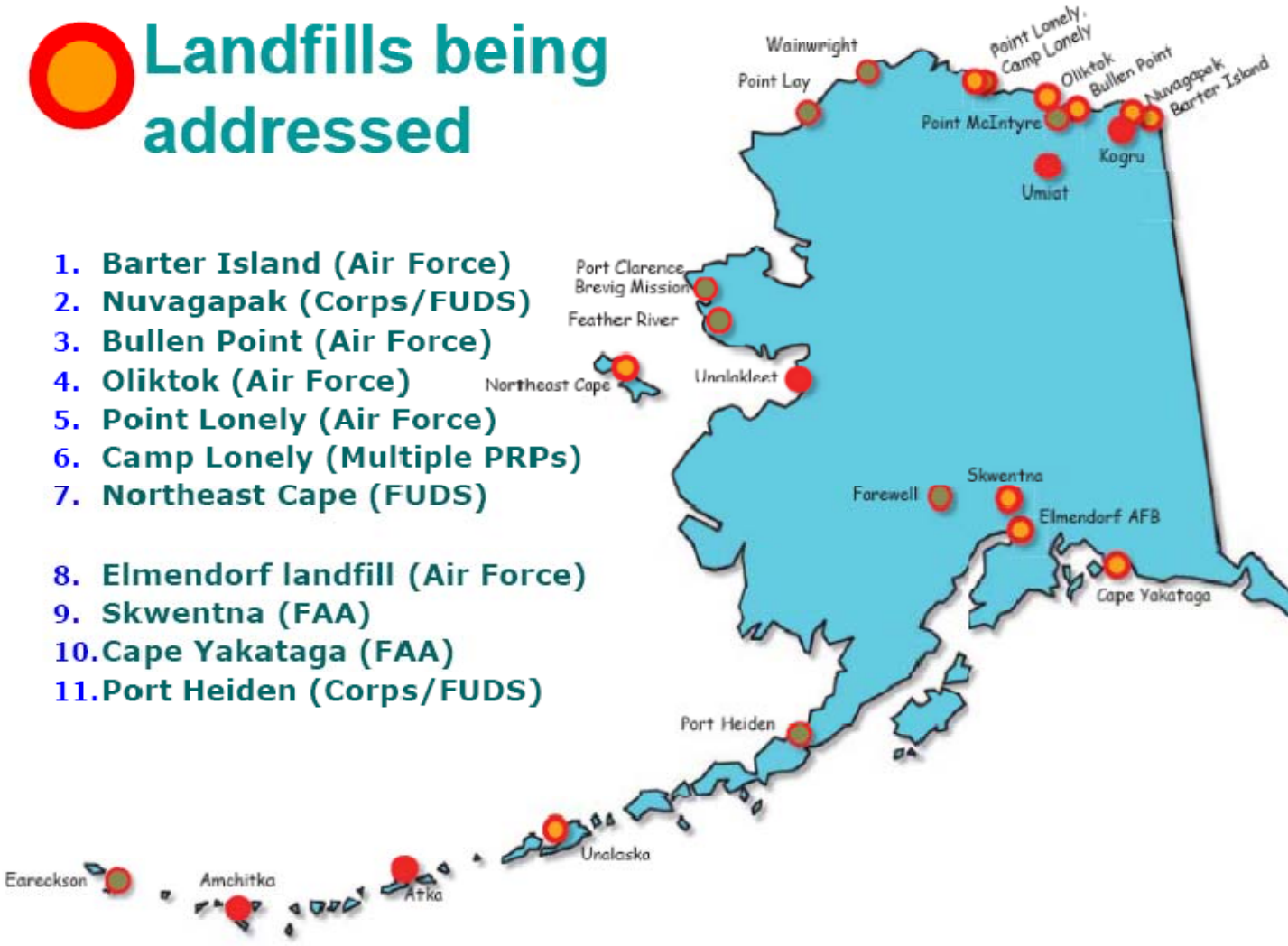
In 2001, an old dump site at Oliktok, on the Beaufort Sea, was found to be significantly eroded by a storm event that occurred in 2000. Drums and other wastes, including PCBs, were washed into the sea, and oil was released. The dump is directly adjacent to a fish camp, and was used as a boat launch for whaling expeditions until the 2001 erosion problems.

The old landfill at Port Heiden, on the Alaska Peninsula, which was created during World War II by then-Fort Randall, had a mixture of military and village waste. Military funding was used in 2007 to clean up just the waste most clearly military-related, leaving the old town waste exposed to coastal erosion, estimated at 10-30 feet per year.

Cape Yakutaga, an old Federal Aviation Administration eroding dumpsite on the Gulf of Alaska. Contaminants include dioxins.

Alakanuk, on the south bank of the Yukon River. This is an old Bureau of Indian Affairs school landfill from the 1970's. It has been covered for 30 years, but recent river erosion has exposed waste.

Kwigillingok, on Kuskokwim Bay in the Bering Sea. This is an active landfill that is eroding. The fence at the facility is necessary to keep waste in the landfill during tidal or storm events. In spite of the fence, waste escapes the landfill during these events.



ADEC's Contaminated Sites Program has been involved in an effort to inventory, plan for and remediate eroding historic dumpsites owned or operated by the military during the decades of military presence in Alaska. The landfills shown have been, are being, or will be addressed under this cooperative venture. Many more eroding sites, exist, however. Limited military funding can be available, but only when hazardous waste is proven to exist in a landfill, and this can be very difficult.

Lack of shoreline sea ice on the North Slope exposes this shoreline at Drew point to melting of permafrost, followed by sloughing of large blocks of land. (USGS photo, Gary Clow, 2004)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

JAN 3 0 2009

Reply to: AWT-128

Bob Blankenburg, P.E.
Solid Waste and Pesticides Program Manager
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, Alaska 99501

RE: Coastal Impact Assistance Program Proposal: "Contaminated Site and Landfill Inventory"

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game
Division of Wildlife Conservation

PROJECT TITLE: Population Delineation, Distribution, and Seasonal Habitat Use of the Alaskan Breeding Population of Steller's Eiders.

PROJECT CONTACT

Contact Name: Dan Rosenberg
Address: ADF&G, 525 W. 67th Ave., Anchorage, AK 99518
Telephone Number: (907) 267-2453
Fax Number: (907) 267-2859
Email Address: dan.rosenberg@alaska.gov

PROJECT LOCATION

Steller's eiders (*Polysticta stelleri*) will be captured and marked on the breeding grounds in the vicinity of Barrow, Alaska (71.4°N, 156.5°W) (Fig. 1). Bird movements will be monitored globally throughout the annual cycle and may be located anywhere within the range of the Pacific population of Steller's eiders (Fig. 1). For most of the year eiders primarily use protected nearshore waters (lagoons, spits, barrier islands, embayments) of the Beaufort, Bering and Chukchi Seas and northern Gulf of Alaska.

PROJECT DURATION

The project will include two (2) field seasons for capture and marking with half the transmitters deployed in each year. Ideally this will occur in two successive years beginning in Year 1. However, eiders do not nest in Barrow every year and capture and marking may not be feasible in all years due to low numbers of birds requiring us to adjust this schedule. We do not anticipate more than 3 years (breeding seasons) for capture. Once birds have been transmitted they will be monitored for two years (two annual cycles). Report writing will begin in the final year of data collection. The project can be completed in full in 4 years if breeding conditions allow.

ESTIMATED COST

These are estimates only and actual expenditures may vary.

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
210,400	83,400	83,400	22,800	20,800

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 09**	**FY 10**	**FY 11**	**FY 12**
210,400	0	0	210,400	0

PROJECT DESCRIPTION

The purpose of this project is to help conserve and protect coastal habitats used by Steller's eiders throughout their annual cycle by: 1) defining intra– and interannual distribution and habitat use of the federally threatened population of Steller's eiders breeding in Alaska; 2) delineating the distribution and habitat use of the threatened population relative to the larger Pacific population of Steller's eiders; 3) determining patterns of distribution and habitat use by the threatened population within and adjacent to proposed oil and gas development in the Beaufort, Chukchi and Bering Seas and northern Gulf of Alaska; and 4) identifying affiliations between breeding, molting, and wintering areas of the threatened population. In addition, information from this project will better define patterns of nesting fidelity and help determine if the Alaska breeding population represents a discrete population segment markedly separated from the larger Pacific population of Steller's eiders.

We will accomplish this by marking at least 20 adult female Steller's eiders nesting near Barrow, Alaska, with internally implanted satellite transmitters and monitoring their dispersal patterns and seasonal habitat use weekly through 2 annual cycles (Years 1 and 2). Satellite transmission data will be analyzed using Argos Data Collection and Location Systems (Service Argos, Inc. Landover MD). We expect to receive up to 600 locations/bird/year with resolutions up to 150m. We will continue to monitor data transmissions in Years 3 and 4. Report writing will occur in Year 4.

Satellite telemetry provides the best method for collecting this information because the potentially vast geographic range of these birds between wintering and nesting areas makes conventional telemetry impractical. Satellite telemetry has been successfully used to monitor the movements of sea ducks including Steller's eiders that travel over vast and remote regions.

Barrow and the adjacent National Petroleum Reserve Alaska (NPRA) are the primary nesting area for the listed population (Fig. 1). The project will include 2 breeding seasons for capture and marking. Data will be combined with existing habitat use and distribution data and incorporated into a Geographical Information System, and submitted as a final report or publication within one-year of final data collection.

The Pacific population of Steller's eiders is divided into two breeding populations, one in Russia and one in Alaska (U.S. Fish and Wildlife Service 2001) (Fig. 1). In June 1997, the Alaska breeding population of Steller's eiders was listed as threatened under the Endangered Species Act (ESA) by the U.S. Fish and Wildlife Service (USFWS) (Federal Register 62(112): 31748-31757). The much larger Russian breeding component of the Pacific population is not listed. The two populations which overlap on much of their range, exhibit genetic homogeneity and can only be differentiated geographically by nesting locals.

Identifying non-breeding habitat of the Alaskan breeding population is a high priority task of the Steller's eider Endangered Species Recovery Team. In spite of some recent telemetry and banding since 2000, the range of the Alaska-breeding population during the non-nesting season remains poorly understood. This inability to fully delineate areas used by the listed population outside the breeding season makes it difficult to efficiently target regulatory and management

actions as birds disperse within the range of the larger Pacific population. The listed population which likely numbers fewer than 500 birds is less than one percent of the overall Pacific population.

During the non-breeding season birds from both breeding populations may transit, stage, molt, or winter in nearshore and offshore marine waters adjacent or within the Chukchi Sea Oil and Gas Lease Sale 193, and proposed lease sales in the North Aleutian Basin, Beaufort Sea, and Cook Inlet (Minerals Management Service, OCS Five-Year Oil and Gas Leasing Program, 2007-2012). Critical Habitat for the Steller's eider has been designated in the Bering Sea (Kuskokwim Shoals) and North Aleutian Basin (http://alaska.fws.gov/media/StellEider_CHMap.htm).

Delineating annual distribution, habitat use and seasonal affiliations between the Alaska breeding population and the larger Pacific population will allow resource managers to target conservation, protection, and mitigation efforts at the listed population of Steller's eiders. This will also allow resource managers and regulators to make more informed decisions regarding potential risk factors and mitigation strategies for nearshore and offshore development activities.

MEASUREABLE GOALS AND OBJECTIVES

Year 1: Arrange logistics, permitting, contracting, field crew, and purchasing of transmitters and supplies. Capture and mark 10 adult female Steller's eiders with satellite transmitters near Barrow, AK. Monitor and map movements of birds throughout the year.

Year 2: Project field preparation as in Year 1. Capture and mark 10 additional adult female Steller's eiders with satellite transmitters near Barrow, AK. Monitor and map movements of birds transmitted in Year 1 and Year 2. Incorporate other known location information into GIS

Year 3: Continue to monitor and map movements of birds transmitted in Year 1 and Year 2.

Year 4: Continue to monitor and map movements of birds transmitted in Year 2. Complete report on project findings regarding seasonal movements, annual distribution, habitat use, and delineation of seasonal use areas by the Russian and Alaskan breeding components of the Pacific population of Steller's eiders.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP authorized uses #1 *projects and activities for the conservation, protection, and restoration of coastal areas, including wetlands.* The project will benefit the conservation and protection of coastal areas near offshore oil and gas leases in the Chukchi, Beaufort, and Bering Seas and the northern Gulf of Alaska, thereby mitigating impacts to the Steller's eiders. During the non-breeding season eiders may transit, stage, molt, or winter in remote nearshore and offshore marine waters adjacent or within the Chukchi Sea Oil and Gas Lease Sale 193, and proposed lease sales in the North Aleutian Basin, Beaufort Sea, and Cook Inlet (Minerals Management Service, OCS Five-Year Oil and Gas Leasing Program, 2007-2012). Critical Habitat for the Steller's eider has been designated in the Bering Sea (Kuskokwim Shoals) and North Aleutian Basin (http://alaska.fws.gov/media/StellEider_CHMap.htm). Specific information about the use of these vast and remote regions is poorly documented and difficult to obtain due to remoteness, weather, sea ice, travel expense, and logistics.

Knowledge of year-round distribution and habitat use of the listed population will allow land and resource managers to assess potential risk factors and help mitigate potential impacts to the Steller's eiders through conservation and protection of important coastal habitats consistent and commensurate with eider use; identification of areas for protection, habitat acquisition or conservation easements, and by providing information to educate the public and private sector to avoid harmful activities. By improving our knowledge of the timing, location, and significance of habitat use and timing of seasonal movements throughout the annual cycle, regulatory agencies can better evaluate potential effects of oil and gas activities and if necessary implement mitigation measures that will protect Steller's eider habitat. Identifying and protecting important non-breeding habitats is ranked as a high priority task of the Steller's Eider Recovery Team, a team of scientists and state and federal resource managers established by the U.S. Fish and Wildlife Service.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

We have and will continue to coordinate and collaborate on project activities with the Ukpeaġvik Iñupiat Corporation, North Slope Borough Department of Wildlife Management, The U.S. Fish and Wildlife Service Office of Ecological Services Fairbanks, Office of Migratory Birds, Anchorage, and National Wildlife Refuge System (Yukon Delta, Togiak, and Izembek National Wildlife Refuges), Bureau of Land Management, Alaska SeaLife Center, and the Steller's Eider Endangered Species Recovery Team. In addition to a wide range of agency personnel the latter includes members of academia involved with eider research.

COST SHARING OR MATCHING OF FUNDS

CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.

Figure 1. Location of the proposed capture site in Barrow, Alaska and the range of the Pacific population of Steller's eiders (Russian and Alaskan breeding birds) throughout the annual cycle. Both breeding populations occur on molting and winter areas depicted on the map. Staging and molting areas in the Beaufort, Chukchi and northern Bering Sea are not included. Map courtesy of USFWS.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Department of Natural resources
Water Resources Section, Division of Mining, Land and Water

PROJECT TITLE: Implementation of StreamStats for the Cook Inlet Area, Alaska

PROJECT CONTACT

Contact Name: Gary Prokosch
Address: 550 W. 7th Ave, suite 1020, Anchorage, Alaska 99501-3577
Telephone Number: (907) 269-8645
Fax Number: (907) 269-8947
Email Address: gary.prokosch@alaska.gov

PROJECT LOCATION

Coastal zone areas of the Cook Inlet basin, Alaska, including Anchorage, Mat-Su, and Kenai Coastal Districts

PROJECT DURATION

Three years.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
375,000	125,000	125,000	125,000	0

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
375,000			375,000	

PROJECT DESCRIPTION

StreamStats is a web-based Geographic Information System (GIS) application developed by the U.S. Geological Survey (USGS) in cooperation with the Environmental Systems Institute, Inc. (ENRI), that allows users to obtain streamflow statistics and drainage basin information for any user selected stream location. This project would contract with the USGS and focus development on a fully functional web accessed stream flow and drainage basin applications for the Cook Inlet Basin. Implementation of StreamStats for Cook Inlet would ensure that the Department of Natural Resources manages water resource allocations based on rapid retrieval of best available data to protect the environmental resource while furthering economic growth and the health and well being of people in the Cook Inlet Basin. Over or under allocation of water could result in damage to the physical environment, and the ecosystems upon which life is dependent. This

StreamStats application directly addresses the allocation of water issue based on best available science, as it allows for the water right adjudicator to use flow data and drainage basin information not currently available. Please see the USGS web site at http://water.usgs.gov/osw/streamstats/ for complete details on this application and examples of where it is already functional. Currently Streamstats is fully implemented in 14 states, and is in development in 12 others.

This project is planned as a three year project, with goals and outcomes required in each of the three years. At the end of both years one and two demonstrable meeting of project goals are required of USGS to allow for the initiation of the final phase of the project. In the first year available streamflow data, basin characteristics, climatic data, and existing streamflow statistics will be combined with a digital elevation model (DEM) for the Cook Inlet. Included in this assembly of data are the analyses of existing DEM data needed to complete this application, and as necessary additional DEM data may be sought.

In the second year the model upon which the web based application will be based will be developed, calibrated, and tested. The model will use the data and analysis from year 1. This is a lengthy process necessary to assure consistent high quality results. At the conclusion of year two the outcome and goal would be a fully functional model that has been verified for accuracy, but not yet ready for publication.

The third year of the project readies the entire project for publication on the USGS web site. This will bring the project and necessary documentation together to allow for public access through the web. Necessary to this process is bringing the work into standards required for USGS publications to ensure consistency with other StreamStat sites in existence for other areas of the country. At the end of the third final year a fully functional web access StreamStat application will be published with all applicable documentation and standards provided.

The need for the StreamStats application became apparent at the State level from cooperative work between ADF&G and DNR in the instream flow reservation process. Once the applicability of the StreamStats process became obvious, the USGS was brought into the discussion. The USGS has also had other inquires as to development of the StreamStats application from other state and federal agencies. DOTPF has expressed interest in terms of road design for bridges and culverts, and the US Fish and Wildlife Service for low flow estimates for fisheries resources.

MEASUREABLE GOALS AND OBJECTIVES

As planned this is a three year project. At the end of the first year the assembly of all needed data as described above will be the measure of project progress, and a quantifiable documentation demonstrating the project goals. At the conclusion of year two the outcome and goal would be a fully functional model that has been verified for accuracy, but not yet ready for publication. At the end of the third final year a fully functional web access StreamStat application will be published with all applicable documentation and standards provided.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with several CIAP authorized uses. However, it is most strongly consistent with CIAP authorized use # 1, *Projects and activities for the conservation, protection,*

or restoration of coastal areas, including wetlands. This project will provide easy access to flow data when dealing with projects and activities in the coastal areas of Cook Inlet where conservation, protection, or restoration may be necessary.

The most poignant example of consistency with the authorized use in category 1 is with regard to instream flow reservations (ISFR). An ISFR can, among other purposes, be requested to protect fisheries habitat. The concept of ISFR is to ensure that sufficient water remains in any applied for reach of stream during all times of the year to accommodate the appropriate life cycle and species of fish that use the habitat. When the state receives an application for water use, this project will provide the essential data upon which quantities of flow for reservation can be based. Where data are not present, defensible accurate estimates of flow are mandatory to justify water needed for maintenance of the habitat. To meet the statutory requirements of DNR pertaining to the allocation of surface water resources it is necessary to accommodate not only the fishery resource, but all other users of that resource. Therefore, in order to allocate water in sufficient quantity to protect the fisheries resource it is essential to know how much water is present at any given time, and what portion of that available flow is needed for the fisheries habitat, while still allowing for other users of the water not necessary to the fisheries habitat. This issue is specifically addressed in the StreamStats application. It allows for rapid retrieval of best available scientific estimates of flow that can be use to complete an ISFR for a river that both protects the necessary fisheries resource, while simultaneously preserving as much water in the stream as possible for other users of the water resource. This same data would be available through this project to evaluate projects and activities proposed in the coastal areas of Cook Inlet as they relate to land and water use permitting and project construction. This project will allow land managers to make sure sufficient water is reserved to protect the stream's fish habitat and wetland values.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Central to this project is the implementation of the StreamStats application as developed by the USGS. This project is specifically designed to coordinate and take advantage of this national effort to use this relatively new Department of the Interior procedure, and make it available to all potential users.

COST SHARING OR MATCHING OF FUNDS

No cost sharing or matching funds are included in the work plan.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Environmental Conservation, Water Division

PROJECT TITLE: Offshore Oil/Gas Wastewater Study

PROJECT CONTACT

Contact Name: Lynn Kent
Address: 555 Cordova Street, Anchorage, AK 99501
Telephone Number: (907) 269-6281
Fax Number: (907) 334-2415
Email Address: lynn.kent@alaska.gov

PROJECT LOCATION

The emphasis of this project will be Alaska coastal waters subject to current or future oil and gas exploration and production.

PROJECT DURATION

This project is anticipated to take two years to complete.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
350,000	175,000	175,000		

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
350,000	0	0	350,000	0

PROJECT DESCRIPTION

This project involves compiling information about discharges to ocean waters from offshore oil and gas exploration activities, and preparing and presenting a comprehensive report. Discharges from oil and gas activities to ocean receiving waters and their potential effects are a paramount concern to coastal districts. The study will characterize sources, quantity and quality of permitted discharges; examine available technologies to minimize discharge volumes and to maximize quality; characterize regulatory regimes and requirements; and evaluate the fate and effect of discharged pollutants. A steering committee comprised of state and federal resource agencies, local government/coastal districts, and stakeholders will guide the effort which will culminate in presenting findings to interested parties in one or more public workshops.

MEASUREABLE GOALS AND OBJECTIVES

Year 1:

- Establish a steering committee from agencies, industry, and other stakeholders;
- Compile information about the sources, quantity and quality of discharges to ocean waters from offshore oil and gas exploration and production activities;
- Evaluate the impact of oil and gas discharges on ocean resources;
- Evaluate the efficacy of existing technologies to reduce the quantity of discharges and to improve the quality of discharges;
- Evaluate the potential for new or emerging technologies to reduce discharge quantity, improve quality and alternative methods to ocean disposal;
- Prepare and present a draft comprehensive report to steering committee.

Year 2:

- Complete research, reporting and recommendations for final report;
- Present final report in one or more public workshops.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP authorized use #1 - *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.*

This project will result in a comprehensive report that will aid decision-making for natural resource and wastewater permit managers. They can effectively evaluate the potential environmental effects from discharges to ocean waters from offshore oil and gas exploration, development and production activities in coastal areas in Alaska. It is imperative that managers know existing baseline conditions and industry practices and what impacts may occur from current or new oil and gas activities. The Department and other State of Alaska agencies will then use the information to develop effective avoidance, minimization, and/or mitigation measures to ensure environmental protection of the coastal waters from these activities.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Oil and gas exploration, development and production are expanding into new areas as a result of increased state and federal leasing of oil and gas tracts. When discharging into ocean waters, entities must obtain permits and meet federal Clean Water Act Ocean Discharge Criteria requirements. Dischargers into ocean waters that are within the jurisdiction of the Clean Water Act must obtain a National Pollutant Discharge Elimination System (NPDES) permit. Existing discharge permits can cover both state and federal waters.

In 2011, DEC will be the issuing authority for discharge permits into state waters, which will continue, in part, to be based on federal requirements. The issuance of these permits is subject to an Ocean Discharge Criteria (ODC) evaluation that requires dischargers to assess the impact of the proposed discharge on the biological community in the area of the discharge as well as the surrounding biological communities. The purpose of the criteria is to determine the degradation of the waters by certain types of disposal, including analysis of the effect on marine life and ecosystems, the permanence of the effects, and other locations and methods for disposal. DEC will also assume the responsibility to conduct these evaluations.

This project will aid the development of requirements and information for future ODC evaluations. The project will characterize sources, quantity and quality of existing permitted discharges; examine areas of new discharge and potential impacts; examine available technologies to minimize discharge volumes and to maximize quality; characterize regulatory regimes and requirements; and evaluate the fate and effect of discharged pollutants.

COST SHARING OR MATCHING OF FUNDS
This project does not anticipate using CIAP funds to match other grants.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Commerce, Community, and Economic Development
Division of Community & Regional Affairs

PROJECT TITLE: Alaska Community Coastal Protection Project

PROJECT CONTACT

Contact Name: Sally Russell Cox
Address: 550 West 7th Avenue, Suite 1770; Anchorage, Alaska 99501
Telephone Number: (907) 269-4588
Fax Number: (907) 269-4563
Email Address: sally.cox@alaska.gov

PROJECT LOCATION

This project will focus on three villages located within the coastal zone of Western Alaska that are severely threatened by coastal hazards: the communities of Shishmaref, Kivalina, and Shaktoolik.

Shishmaref is located on Sarichef Island, in the Chukchi Sea, just north of the Bering Strait. Shishmaref is five miles from the mainland, 126 miles north of Nome and 100 miles southwest of Kotzebue. The village is surrounded by the 2.6 million-acre Bering Land Bridge National Reserve. Shishmaref is part of the Beringian National Heritage Park. The community lies at approximately 66.256670° North Latitude and -166.071940° West Longitude. (Sec. 23, T010N, R035W, Kateel River Meridian.)

Kivalina is located at the tip of an 8-mile barrier reef located between the Chukchi Sea and Kivalina River. It lies 80 air miles northwest of Kotzebue. The community lies at approximately 67.726940° North Latitude and -164.533330° West Longitude. (Sec. 21, T027N, R026W, Kateel River Meridian.) Kivalina is surrounded by the Chukchi Sea Unit of the Alaska Maritime National Wildlife Refuge.

Shaktoolik is located on the east shore of Norton Sound. It lies 125 miles east of Nome and 33 miles north of Unalakleet. The community lies at approximately 64.333890° North Latitude and

-161.153890° West Longitude. (Sec. 23, T013S, R013W, Kateel River Meridian.) Eastern Norton Sound is designated as a critical habitat for the spectacled eider.

PROJECT DURATION
This project is projected to last two years.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$1,000,000	$503,600	$496,400		

Funding per Allocation Year of CIAP ($)				
TOTAL	**FY 07**	**FY 08**	**FY 09**	**FY 10**
$1,000,000			$1,000,000	

PROJECT DESCRIPTION
The Alaska Community Coastal Protection Project will develop strategies to protect the natural coastal areas surrounding the communities of Shishmaref, Kivalina and Shaktoolik as these villages pursue the relocation of all or portions of the existing community. Each community strategy will address current threats to the coastal environment by infrastructure (fuel tanks, sewage facilities) at risk from erosion, flooding and storm surge, as well as the future protection of the coastal environment through well-planned community relocation activities. The approach to the strategic management plans for the three communities will be similar to the CIAP-funded **Mertarvik Community/Waterfront Strategic Management Plan**[2] (see the Minerals Management Service press release for this project at http://www.mms.gov/ooc/press/2010/press0119.htm). ***The Alaska Community Coastal Protection Project*** will also utilize information from the CIAP-funded **Geohazard Evaluation and Geologic Mapping for Coastal Communities Project**[3], which will produce maps identifying local natural hazards that must be considered in the siting, design, construction, and operations of development projects to ensure protection of the coastal area and to identify proposed community relocation sites in response to the severe coastal hazards issues now facing Shishmaref, Kivalina, and Shaktoolik**.**

Background
In 2003, a congressionally-directed study[4] found that 184 out of 213, or 86 percent, of Alaska Native villages are affected to some extent by flooding and erosion. The study found that "while the problems are long standing, various studies indicate that coastal villages are becoming more susceptible to flooding and erosion due in part to rising temperatures". Alaska has more than

[2] See State of Alaska Project 6 at http://dnr.alaska.gov/coastal/CIAP/March2010/March%2010_Appendix_B-1_State_Project_Descriptions_clean.doc#CIAP0806
[3] See State of Alaska Project 10 at http://dnr.alaska.gov/coastal/CIAP/March2010/March%2010_Appendix_B-1_State_Project_Descriptions_clean.doc#CIAP08010
[4] See http://www.gao.gov/new.items/d04142.pdf. The U.S. General Accountability Office (GAO) was directed to carry out GAO-04-142 December 12, 2003. Alaska Native Villages: Most Are Affected by Flooding and Erosion, but Few Qualify for Federal Assistance.

33,000 miles of coastline, most of which is inhabited by indigenous populations which depend on subsistence resources to maintain livelihood and cultural integrity. Much of Alaska's coastline is impacted to varying degrees by severe erosion due to permafrost degradation and increasing temperatures, thereby exposing many indigenous communities to the uncertainties of a changing environment. [5]

In 2008, the Alaska Climate Change Sub-Cabinet[6] established the Immediate Action Workgroup (IAWG)[7] to identify the immediate needs of the communities imminently threatened by the effects of erosion, flooding, permafrost degradation, and other climate change-related impacts. Six communities were identified and the IAWG set forth to address the immediate actions that must take place over the next 18-24 months to assist these communities. Studies completed[8] since the establishment of the IAWG indicate that that the number of imminently threatened communities is likely much higher than the communities originally identified.

Based on the recommendations of the IAWG, in 2008, the Alaska Legislature established the Alaska Climate Change Impact Mitigation Program (ACCIMP) [9] with funding to address the immediate planning needs of communities imminently threatened by climate change-related impacts such as erosion, flooding, storm surge, and thawing permafrost. The ACCIMP is being implement by the Division of Community and Regional Affairs (DCRA) through technical assistance and grant funding to eligible communities for two purposes: 1) hazard impact assessments to identify and evaluate the climate change-related impacts to a community such as erosion, flooding, storm surge, and permafrost degradation, and to provide recommendations for further action by the community; 2) community planning grants to address the immediate actions the community must take based on the recommendations of the hazard impact assessments. Shishmaref, Kivalina and Shaktoolik are three of the communities DCRA is currently working with through the ACCIMP.

The ***Alaska Community Coastal Protection Project*** will expand upon the efforts of the ACCIMP by developing a strategy to benefit and protect the coastal area surrounding three of the most threatened communities, Shishmaref, Kivalina, and Shaktoolik, as these communities pursue the relocation of all or portions of the existing community. Each of the subject communities is located near a national reserve, a national wildlife refuge or a critical wildlife habitat. Each community has fuel or sewage infrastructure threatened by flooding, erosion or storm surge that in turn poses a real threat to the surrounding coastal environment and resources therein. A well planned strategy will not only address the near-term impacts to the coastal environment by infrastructure imperiled by coastal hazards, but will also minimize or negate impacts to the coastal environment during the relocation process.

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[5] Mason, Owen, M.J. William, O.H. Pilkey (1997): Living with the Coast of Alaska. Duke University Press, Durham, North Carolina.

[6] See http://www.climatechange.alaska.gov. The Alaska Climate Change Sub-Cabinet was established by Alaska Administrative Order 238 to advise the Office of the Governor on the preparation and implementation of an Alaska climate change strategy.

[7] See http://www.climatechange.alaska.gov/IAWG.htm.

[8] In 2007, the U.S. Army Corps of Engineers initiated the Alaska Baseline Erosion Assessment to coordinate, plan, and provide an overall assessment on the prioritizing of shoreline erosion management efforts in the State of Alaska.

[9] See http://www.commerce.state.ak.us/dcra/ACCIMP.htm.

Shishmaref is surrounded by the 2.6 million-acre Bering Land Bridge National Reserve and part of the Beringian National Heritage Park. Shishmaref is being affected by high rates of erosion along the shoreline. Climatic conditions have led to icepack development occurring progressively later each year. Without the icepack in place, the island is more susceptible to fall and early winter storms that have increased erosion and littoral drift. Erosion and littoral drift are shifting the island footprint northeastward and southwestward, subjecting the developed areas to massive wave scour and erosion of the fine materials that make up the island. Erosion is undermining buildings and infrastructure, causing several structures to collapse and fall into the sea *(see photos, next page)*. All efforts to arrest the erosion have been unsuccessful for other than short periods of time. According the **U.S. Army Corps of Engineers Baseline Erosion Assessment**, the airport and sewage lagoon have the greatest vulnerability to erosion, with the village power plant and bulk fuel facilities at risk to erosion.

Coastal storm and eroded shoreline in Shishmaref

Home falling over eroded bank in Shishmaref

Kivalina is surrounded by the Chukchi Sea Unit of the Alaska Maritime National Wildlife Refuge. The Chukchi Sea Unit contains the two largest arctic seabird colonies in the United States. Kivalina has experienced cyclic erosion and accretion, with modest accretion on the Chukchi Sea side more prevalent during the 30-year period of 1970 to 2000. The higher energy storms resulting in significant erosion occur during the winter months when the Chukchi Sea is frozen. This sea ice has served as natural erosion protection in the past. However, an increase in temperature of the Chukchi Sea has led to longer periods of open water and the Chukchi Sea is less likely to be frozen when damaging winter storms occur. Winter storms occurring in October and November of 2004 and 2005 resulted in significant erosion that threatened both the school and the village fuel tank farm. Erosion has also resulted in the loss of the community washeteria drain fields.

A coastal storm threatens critical infrastructure in Kivalina

A local work crew attempts to protect the eroded shoreline in Kivalina

Shaktoolik is located on eastern Norton Sound, which is designated as a critical habitat for the spectacled eider. Shaktoolik's beaches have historically been susceptible to damage and erosion from storms, tidal surges, and sea ice. Several areas along the coastline are vulnerable to erosion and flooding during the storm season. Considerable coastline erosion in the community occurred during recent storms in 2003, 2004, and 2005. Most of the Shaktoolik community and surrounding area lie within the 100-year floodplain. Erosion during flooding damaged the airstrip so extensively it was replaced. According to the **U.S. Army Corps of Engineers Baseline Erosion Assessment**, the next large storm could erode away the narrow spit of land that connects Shaktoolik to the mainland, effectively cutting the community off from their source of freshwater. The 2005 fall storm left much driftwood just a few feet from the bulk fuel storage facilities. A storm greater than the 2005 storm, could damage the bulk fuel storage, causing fuel to impact the surrounding coastal environment.

Log inundation following a coastal storm in Shaktoolik

The Proposed Project

The Alaska Community Coastal Protection Project broadens and extends the scope of work of the IAWG and the ACCIMP to a longer-term collaborative, strategic planning process that will address current threats to the coastal environment by infrastructure (fuel tanks, sewage facilities) endangered by erosion, flooding and storm surge, as well as the future protection of the coastal environment through well-planned community relocation activities. An important component of this project is the provision of funding of local project coordinators to represent each community at interagency stakeholder meetings throughout the strategic planning process.

The inter-agency stakeholder groups are based on the model used by DCRA with the village of Newtok's relocation effort[10]. The development of a community relocation strategy, involving

[10] See http://www.commerce.state.ak.us/dcra/planning/Newtok_Planning_Group_Webpage.htm . Since 2006, the Division of Community & Regional Affairs has coordinated the Newtok Planning Group, an interagency coalition assisting the Village of Newtok in its relocation efforts.

[11] ***GAO-09-551 Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion*** at http://www.gao.gov/new.items/d09551.pdf

multiple stakeholders and the coordination of complex project schedules has proven to benefit when community representatives, funding agencies and permitting agencies gather at the same table on a regular basis to coordinate plans, leverage resources and minimize conflicts. A well-planned strategic management schedule can reduce impacts to intertidal and uplands nearshore areas during the transportation of materials and equipment, as critical infrastructure is moved in each existing community, and as each community relocates to a new village site. The development of a strategic management plan will also provide an important venue through which the many stakeholders in village relocation activities can become involved in the decision-making that affects the resources of the valuable coastal area surrounding each of the three communities.

Methodology

1. Interagency Collaborative Decision-Making Structure: Using the collaborative model DCRA has established for the Newtok Planning Group, project staff will set up inter-agency stakeholder groups for the three focus communities. Through these working groups, collaborative organizational structures will be developed to focus the combined capabilities of local, regional, state, and federal stakeholders on developing a strategy for the management of coastal hazards, threatened infrastructure, and community relocation activities for each of the three subject communities. These stakeholder groups will serve as a vehicle for establishing permitting requirements and construction windows, and for coordinating resources and technical assistance from state and federal agencies, regional organizations and local governments on a community-specific basis. Agency expertise, authorities, capabilities, and funding will be identified, as well as funding and functional gaps. The comprehensive strategic management plans described in item 3, below, will be developed by a contractor through input from the participants in these stakeholder groups.

The success of this collaborative model has been recognized by the General Accountability Office in its 2009 report on Alaska Native village relocation[11], *"Of the 12 villages exploring relocation options, Newtok has made the most progress in its relocation efforts. The Newtok Planning Group, formed in 2006 by federal, state, regional, and village partners, has helped to accelerate the relocation process that the village proactively initiated in 1994. The 3 other villages that will likely need to relocate all at once—Kivalina, Shaktoolik, and Shishmaref—have yet to identify sites that federal, state, and village officials agree are safe, sustainable, and desirable for the subsistence lifestyle of the villagers."*

This collaborative model will maximize cost efficiencies and labor effectiveness, reduce conflict in community projects and reduce environmental impacts and hazards during the implementation of community action strategies.

2. Local Project Coordinator: Funding will be provided to each community to establish one full-time local project coordinator who will represent the community on addressing coastal hazards and work with project staff, agencies, and the contractor in the development of the community strategic management plans. Travel funding will be provided to each local project

[11] ***GAO-09-551 Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion*** at http://www.gao.gov/new.items/d09551.pdf

coordinator to meet in Anchorage each quarter of the project with the interagency stakeholder group each quarter for strategic management plan development.

3. Comprehensive Strategic Management Plan: A contractor will be hired to develop a strategic management plan for each community which will provide the "blueprint" for how the community and agencies will proceed over the next ten years to address current threats to the coastal environment by infrastructure (such as fuel tanks, sewage facilities) endangered by erosion, flooding and storm surge, as well as the future protection of the coastal environment through well-planned community relocation activities. The contractor will work with project staff and the local project coordinators, and attend inter-agency meetings to develop the strategic management plans, which will include:

- The projected timelines and costs associated with projected relocation/shoreline protection and/or other community development activities
- The sequence of tasks and subtasks that must take place.
- The entities responsible for specific tasks or activities. The roles of the stakeholders will be defined and clarified. Opportunities for agency collaboration will be identified.
- The best construction windows to reduce environmental impacts to the environment
- The resources required.
- The schedule for activities. Development of a strategic management schedule for activities will be an important product. In addition to being described in the planning document narrative, the schedule will be presented as a Gantt chart.

Key Milestones

Year One:

- Assign staff to implement the project.
- Establish inter-agency planning work groups for each community. DCCED as co-chair of the IAWG will initiate invitations to state and federal agencies.
- Develop grant agreements with each community to hire a qualified local project coordinator to represent the community in working with the interagency stakeholder group.
- Develop webpage that chronicles the progress of the inter-agency meetings and strategic planning work in each community.
- Hire contractor to work with project staff, community and agencies to develop a five-year strategic management plan
    - Collection and reduction of baseline data of community and surrounding environment, including an inventory of the physical environment. Develop critical fish and wildlife construction time windows that will be incorporated into the overall schedule.
    - Identify major stakeholder issues and develop goals and objectives. A summary of this process, including the participants and findings, will be provided in the planning document.

Year Two

- Further refinement of major stakeholder issues and the development of goals and objectives of the relocation or shoreline protection process.

- Development of work breakdown structure and required resources that describes the actions required for carrying out the community planning strategy, including:
    - The sequence of tasks and subtasks.
    - The entities responsible for specific tasks or activities.
    - The resources required.
    - The schedule for activities.
- Preparation of draft and final strategic management plans.

COORDINATION EFFORTS WITH STATE/LOCAL ENTITIES ON THE PROJECT

Agency collaboration is an integral part of the ***Alaska Community Coastal Protection Project.*** There is a great unmet need for the type of technical and administrative assistance this project will provide to communities. This need has most recently been articulated by the IAWG. The project interfaces with and serves as a continuation of two existing State of Alaska efforts addressing the issues of communities impacted by climate change: the Immediate Action Workgroup and the Alaska Climate Change Impact Mitigation Program.

This project has received support from the Alaska Climate Change Subcabinet Immediate Action Workgroup and representatives of the three communities (see letters of support, Attachment A).

MEASURABLE GOALS AND OBJECTIVES

Project Goal: Development of a Comprehensive Strategic Management Plan for each community that will provide criteria and guidelines for mitigating threatened infrastructure at the current village site and for community relocation activities. Representatives of each community and members of the inter-agency stakeholder group will participate in this process. These documents are intended to strategically plan and organize sustainable activities to guide the relocation with no or minimal impacts on the surrounding natural coastal environments of the three communities.

Measurable Outcomes: Based on the recommendations of the Immediate Action Workgroup for each of the three communities, and through studies by other programs, a strategic management plan will be developed for each of the three communities which will address the five-year planning needs to address each community's recommended action, be it shoreline protection, elevation of community structures, migration from shorelines, relocation, or a combination of these actions. Each community strategic management plan will outline a work breakdown structure and required resources that describe the actions required for carrying out the community planning strategy, including:

- The sequence of tasks and subtasks.
- The entities responsible for specific tasks or activities
- The resources required.
- The schedule for activities.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project complies with CIAP Authorized Use number 1, *Projects and activities of the conservation, protection, or restoration of coastal areas, including wetlands.* This project will help protect the coastal area of Shishmaref, Kivalina and Shaktoolik. The coordination provided by the inter-agency work group and the strategic management plans will provide vital information to each community, and to funding and permitting agencies and other organizations working on the community action, on critical fish and wildlife construction time windows in order to protect and to mitigate impacts to fish, wildlife and other natural resources in the area during relocation, shoreline protection, or other activities. Transportation of construction materials and equipment in Western Alaska is limited to barge transport during the months of June through September. Because this time period also coincides with the migration of birds, fish and marine mammals that frequent this region, transportation windows will need to be closely coordinated with migratory periods so as not to impact fish and wildlife. A strategic management schedule can reduce impacts to intertidal and upland near-shore areas during the transportation of materials and equipment by coordinating when relocation and construction activities take place.

The inter-agency working groups and the strategic management planning process will provide an important venue through which agencies and other stakeholders can become involved in the decision-making that affects the resources near the impacted communities. Permitting agencies will be able to work with funding agencies in order to develop a strategic plan that effectively carries out community relocation and construction activities while addressing environmental needs.

The strategic plans will identify the natural resources that are most at risk from the impacts of climate change within or adjacent to each of the three communities, and will identify those facilities within the communities that pose the greatest threat to the natural coastal environment as they are further impacted by climate change. Erosion of a community landfill, sewage lagoon or fuel tank farm can result in pollutants such as raw sewage, oil, gasoline, and household hazardous wastes being released into anadromous fish streams or coastal waters that serve as critical migration corridors to marine mammals, adversely impacting fish and wildlife. Each community strategic management plan will identify means to minimize the potential for damage to threatened facilities in order to protect the coastal area and fish and wildlife of each community.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

As part of the inter-agency work groups facilitated through this project, project staff and communities will be working with personnel from the U.S. Army Corps of Engineers; U.S. Departments of Agriculture, (Rural Development and Natural Resources Conservation Service); Housing and Urban Development; Interior, (Bureau of Indian Affairs); Transportation, (Federal Aviation Administration); and the Environmental Protection Agency.

The potential benefits of this project reach far beyond the individual communities being served. The State of Alaska is just beginning to develop a process for assisting communities imperiled by erosion, flooding, storm surge and thawing permafrost. It is clear that the efforts of federal, state and local partners are needed to address the environmental community impacts of these

natural hazards. The collaborative planning model utilized by the ***Alaska Community Coastal Protection Project*** may serve as a prototype for assisting other rural Alaska villages threatened by these natural hazards. The model may also be highly effective for coordinating and delivering assistance to communities outside Alaska who are dealing with similar natural hazards. This model maximizes cost-sharing and leveraging of resources among federal, state and local agencies and minimizes conflicts in relocation and construction activities which in turn, will reduce impacts to the natural coastal environment.

COST SHARING OR MATCHING OF FUNDS

CIAP funds for this project will not be used for cost sharing or matching purposes for any other project.

Attachment A: Letters of Support

Memorandum

To: Coastal Impact Assistance Project Review Committee

From: Michael Black, State Co-Chair, Immediate Action Workgroup, Alaska Climate Change sub-Cabinet/ Deputy Commissioner, Department of Commerce, Community and Economic Development
Patricia Opheen, Federal Co-Chair, Immediate Action Workgroup, Alaska Climate Change sub-Cabinet/Chief of Engineering – Alaska District U.S. Army Corps of Engineers

Date: June 18, 2010

Re: CIAP Proposal for Alaska Community Coastal Protection Project

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On behalf of the Immediate Action Workgroup (a federal-state collaborative working group addressing the needs of imperiled communities) we would like to express our support for the proposed Alaska Community Coastal Protection Project. The project is important to our mission since it will be critical to developing strategies to protect the natural coastal areas surrounding the communities of Shishmaref, Kivalina and Shaktoolik, all considered to be imperiled. All of these communities are considering the relocation of all or portions of the existing community.

The work proposed through the Alaska Community Coastal Protection Project is a logical continuation of the immediate actions carried out by the Immediate Action Workgroup (IAW) in these communities. The establishment of inter-agency working groups for each community, the funding of community project coordinators and the development of strategic management plans for each community's recommended action will be of lasting benefit to these vulnerable communities.

The proposed project will reduce impacts to the environment as a result of good coordination, communication and planning, mitigate issues and costs for state and federal agencies, and provide Shishmaref, Kivalina and Shaktoolik with the necessary technical assistance to carry out the community action plan to address the impacts of coastal hazards.

We support this project as a valuable investment in the future of Alaska's rural communities.

Steve Ivanoff
P.O. Box 235
Unalakleet, Alaska 99684
(907)624-3299 or 3093: Fax (907)624-3095

I am a village transportation planner for our regional non-profit corporation, Kawerak Inc., working with flood and erosion impacted communities.
Shaktoolik is one community I have been tasked to work with given the dire situation the village if facing from storms that are becoming more frequent in this last decade.
I have traveled extensively to many Alaska communities and am very familiar with other villages in Western Alaska that have also become vulnerable.
Shaktoolik is as vulnerable as any community given their inability to access higher ground in an intense storm. In these fall storms the peninsula that the village is located on becomes an island causing stress and legitimate concern.
The flood of November '09 was the most intense storm our area has experienced in several decades but the slush and ice prevented a possible catastrophic situation for them. The stars weren't aligned for a flood given the tide for that November 9th day was the lowest of the month and the flood occurred at least 10 hours prior to the peak tide of the day. Had the stars been aligned for an intense flood their members of the community would have been at substantial risk given the 65 mph winds that occurred.
With this said I support the proposal submitted by the DCRA for the Alaska Community Coastal Protection Project that would assist these communities in creating solutions for their safety.
Every American, and Alaskan should not have to fear for their safety as is currently the case with the residents of the villages in this proposal.

Thank you much for your consideration and time,

Steve Ivanoff

City of Shishmaref
P.O. Box 83
Shishmaref, Ak 99772
Phone: (907) 649-3781/4811
Fax: (907) 649-2131
Email: shhcityclerk@yahoo.com

June 21, 2010

The City of Shishmaref would like to express its support for the proposed Alaska Community Coastal Protection Project.

The community of Shishmaref has determined that the threat to life and property from reoccurring beachfront erosion requires immediate action. The loss of land through erosion action and increasing risk to property and lives has caused a dangerous situation for the community of Shishmaref. The community has determined that staying on the island to face the ever-present threat from ocean-based storms in unacceptable. The only viable solution is to relocate the community off the island to a nearby mainland location that is accessible to the sea, suitable for the subsistence lifestyle of the community, and preserves the culture and integrity of the community.

The work proposed through the Alaska Community Coastal Protection Project will help us in our relocation effort. The establishment of an inter-agency working group for Shishmaref, the funding of a community project coordinator and the development of a strategic management plan for the relocation effort will be of lasting benefit to Shishmaref.

The proposed project will reduce impacts to the environment as a result of good coordination, communication and planning, mitigate issues and costs for state and federal agencies, and provide Shishmaref with the necessary technical assistance to carry out the strategic management plan to address the impacts of coastal hazards.

We support this project as a valued investment in the future of Shishmaref.

Sincerely,

Jennifer Denis

City Council

Cc; files

KIVALINA CITY COUNCIL

P.O. Box 50079
Kivalina, Alaska 99750

Phone: (907) 645-2137
(907) 645-2140
FAX: (907) 645-2175
email: kccadmin@inutek.net
kivalinacity@yahoo.com

To: Minerals Management Service
Alaska OCS Program
3801 Centerpoint Drive, Suite 500
Anchorage, Alaska 99503
Attn: ClAP Review Committee

The Kivalina City Council would like to express its support for the proposed Alaska Community Coastal Protection Project.

The work proposed through the Alaska Community Coastal Protection Project will help us in our effort to address threats to our community due to storm surge and erosion. The establishment of an inter-agency working group for Kivalina, the funding of a community project coordinator and the development of a strategic management plan for the relocation effort will be of lasting benefit to Kivalina.

The proposed project will reduce impacts to the environment as a result of good coordination, communication and planning, mitigate issues and costs for state and federal agencies, and provide Kivalina with the necessary technical assistance to carry out the strategic management plan to address the impacts of coastal hazards.

We support this project as a valuable investment in the future of Kivalina.

Sincerely,

Janet Mitchell
City Administrator

Cc: Kivalina City Council
Files

KAWERAK, INC. ○ P.O. Box 948 ○ Nome, AK 99762

TEL: (907) 443-5231 • FAX: (907) 443-4452

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STEBBINS
ST. MICHAEL
TELLER
UNALAKLEET
WALES
WHITE MOUNTAIN

June 24, 2010

Minerals Management Service
Alaska OCS Program
3801 Centerpoint Drive, Suite 500
Anchorage, Alaska 99503
Attn.: CIAP Review Committee

Re: Letter of Support for: AK DCED Project Proposals for Shaktoolik & Shishmaref

Kawerak, Inc. is writing to express support for State of Alaska DCED Project Proposals for Shaktoolik and Shishmaref to the Coastal Impact Assistance Program. Both communities are recognized by the Immediate Action Workgroup as imminently threatened coastal communities from storm surges flooding and erosion issues.

This funding will provide the planning and technical assistance needed to move their projects in addressing coastal hazards, work with project staff, agencies, and organizations in representing the communities of Shaktoolik and Shishmaref in the development of their community strategic management plans.

Thank you.

Loretta Bullard, President

State of Alaska

Coastal Impact Assistance Program
Project Descriptions proposed by

STATE OF ALASKA

APPROVED TIER 2 PROJECTS

Note: Tier 2 Projects 1-4 have been moved to Tier 1

AKCIAP_SOA_T2-05	Alaska Monitoring and Assessment Program (AKMAP) Alaska Bering Sea Coastal Survey
AKCIAP_SOA_T2-06	Mercury Deposition Monitoring in Coastal Alaska
AKCIAP_SOA_T2-07	Knik River Public Use Area Erosion Control
AKCIAP_SOA_T2-08	Kachemak Bay Drainage Basin Sustainable Access Routes Reservation and Improvement
AKCIAP_SOA_T2-09	Alaska Coastal Management Program Implementation Workshops
AKCIAP_SOA_T2-10	Marine Debris Clean-up
AKCIAP_SOA_T2-11	Yukon-Kuskokwim Delta Community Subsistence Observation Network
AKCIAP_SOA_T2-12	Assessment of Ice Seal Populations Using Biological Samples from the Subsistence Harvest in Alaska
AKCIAP_SOA_T2-13	Monitoring the Harvest of Four Species of Ice Seals in Alaska
AKCIAP_SOA_T2-15	Identification and Characterization of Archaeological and Historical Sites for Conservation Planning in Coastal Alaska
AKCIAP_SOA_T2-16	Klawock Estuary Restoration
AKCIAP_SOA_T2-17	Chukchi Sea and Norton Sound Community Observation Network
AKCIAP_SOA_T2-18	Kenai Forest Road Condition Survey
AKCIAP_SOA_T2-19	Crooked Creek SRS Bank Restoration
AKCIAP_SOA_T2-20	Use of Beach Wildrye to Stabilize Coastal Berms
AKCIAP_SOA_T2-21	Monitoring Storm Surge in Western Alaska
AKCIAP_SOA_T2-23	Erosion Protection and Stream Bank Restoration

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT TITLE: Alaska Monitoring and Assessment Program (AKMAP) Alaska Bering Sea Coastal Survey

PROJECT CONTACT:

Contact Name: Lynn Kent, Director, Division of Water
Address: Alaska Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501-2617
Telephone Number: (907) 269-7599
Fax Number: (907) 334-2415
E-mail Address: lynn.kent@alaska.gov

PROJECT LOCATION:
Alaska Bering Sea

PROJECT DURATION
4 years

ESTIMATED COST:

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
2,000,000	100,000	900,000	900,000	100,000

PROJECT DESCRIPTION:
In the 1990s, the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) embarked upon a National Coastal Assessment developed as part of the Environmental Monitoring and Assessment Program (EMAP) to survey the environmental condition of the Nation's coastal water resources. Alaska containing over 50% of the nation's coastline was left out of the survey until 2001, when five coastal survey regions were established for Alaska. The Alaska Department of Environmental Conservation (DEC) implemented this program as the Alaska Monitoring and Assessment Program (AKMAP). The AKMAP program is focused on conducting applied environmental research to provide, through the use of a random sampling design, estimates of the spatial extent of water quality status based on stressors (chemical contaminants, water quality parameters, and physical changes, e.g. temperature, salinity) and indicators (e.g., benthic fish histopathology, macroinvertebrate diversity). This information can be used by resource managers and others to help protect or restore coastal marine environments and mitigate damage to the marine ecosystem. DEC has completed initial status surveys of Southcentral and Southeast, with field work just completed for the Aleutian survey. The report for the Southcentral Alaska coastal survey

has been completed and can be found at http://www.dec.state.ak.us/water/wqamp/emap_sc.htm. Funding has not been forthcoming to implement and complete surveys of the remaining two regions. This CIAP proposal for a coastal survey of the Alaska Bering Sea includes the proposed Northern Aleutian Basin oil and gas lease sale area. The coastal surveys are key to responsibly protecting our coastal regions. They also provide resource managers with the high quality scientific information needed to manage resource development.

MEASURABLE GOALS AND OBJECTIVES:
This section provides several specific, though not the only, measurable outcomes of the AKMAP work.

- AKMAP sampling plan, Quality Assurance Project Plan, and administrative/contract documents will be completed in 2009 and pre-field season 2010.
- AKMAP survey team will complete sample collection and analyze water, sediment and biological samples during 2 years of field work in 2010 and 2011.
- AKMAP assessment results will be presented in a final DEC report in 2012, and future National Coastal Assessment reports, with information on:
    - Percent of area that has sediments with trace metals or organic contaminants levels exceeding Alaska Water Quality Standards criteria or other benchmarks.
    - Estimate of percentage of fish with chemical contaminants that exceed or do not exceed human or ecological health criteria.
- Public outreach will be conducted on the AKMAP Bering Sea Assessment at the Alaska Forum on the Environment in 2009, 2010 and in 2011. A report that includes the presentations will be provided. Additional outreach will be detailed in the full project scope of work.
- All survey data, after undergoing a rigorous QA/QC, will be archived within the National EPA STORET system, and provided over the AKMAP website.
- Macroinvertebrate voucher collections will be maintained and established at the University of Alaska Fairbanks in addition to the taxonomic data provided in the final datasets.

CIAP AUTHORIZED USE:
This project is consistent with CIAP Authorized Use Number 4: *Implementation of a federally approved marine, coastal or comprehensive conservation management plan.*

This project will continue implementation of the EPA's Environmental Monitoring and Assessment Program, a federally approved comprehensive plan for the development of a long-term research effort to enable status and trend assessments of aquatic ecosystems across the U.S. The assessment results will also be incorporated into the State of Alaska's federal Clean Water Act Section 305(b) report on the condition of Alaska's waters. The project will help establish a baseline and identify what proportions, if any, of the coastal marine environment, such as sediments, water, or fish tissue, have contaminant levels that indicate potential impacts. Only this type of assessment can effectively provide state and

federal resource managers and the public with an unbiased, statistically valid assessment of the condition of Alaska's coastal aquatic resources. AKMAP baseline assessment and future trend assessments are critical to establishing environmentally protective measures and evaluating their effectiveness in the coastal region as oil and gas development takes place.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:
Other partnerships, that could include in-kind services, equipment loans, splitting funding for vessel support, include 1) Minerals Management Service environmental monitoring of the proposed lease sales in the Northern Aleutian Basin, 2) some level of support by EPA and NOAA, 3) University of Alaska School of Fisheries participation under the DEC/UA Memorandum of Understanding, 4) logistical support potentially for some areas provide for by resource developers, and 5) potential community participation and input from the Aleutian East Borough, Bristol Bay, Lakes and Peninsula Boroughs and all Bering Sea communities.

COST SHARING OR MATCHING OF FUNDS:
CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT TITLE: Mercury Deposition Monitoring in Coastal Alaska

PROJECT CONTACT:

Contact Name: Alice Edwards, Acting Director, Division of Air Quality
Address: Alaska Department of Environmental Conservation, 619 East Ship Creek, Suite 249, Anchorage, AK 99501
Telephone Number: (907) 269-7634
Fax Number: (907) 269-3098
E-mail Address: alice.edwards@alaska.gov

PROJECT LOCATION:
Wet deposition monitoring of a suite of trace metals in Kodiak, Kotzebue and Unalaska and mercury sampling in Kotzebue and Unalaska

PROJECT DURATION
This project would be funded by CIAP for 3 years.

ESTIMATED COST:
The total cost is estimated at $266,500. The Department of Environmental Conservation is currently supporting part of the sampling infrastructure for this project through their regular air quality grant.

Spending Estimate ($)			
TOTAL	**Year 1**	**Year 2**	**Year 3**
266,500	86,500	60,000	120,000

PROJECT DESCRIPTION:
This project will assess the deposition of heavy metal contaminants in Alaska's coastal ecosystems. Mercury and a suite of trace metals commonly found in emissions from major stationary sources are sampled by wet deposition.

Mercury and a group of trace metal contaminants are common byproducts of power production and other industrial processes. In the U.S., coal fired power plants are the major source of mercury, followed by medical waste incineration and municipal waste combustion. EPA estimates that US sources only contribute approximately 8% of all mercury airborne levels measured in the US, with the remaining 92% being attributed to long range transport. Since 2000, Asian sources have annually contributed more than 50% of the total mercury emissions worldwide. With industrial development expanding in Asia, these numbers are anticipated to increase over the next decade.

Long range transport of pollutants has been documented for decades. Arctic haze is one of the most famous examples of long range transport of pollutants. The combination of contaminants measured in a location is dependent on the transport path, elevation and transport duration time. Each source has a characteristic signature of chemical composition. Localized weather patterns at the source determine the updraft of pollution into the free troposphere, where pollutants can be transported for many thousands of miles. Global circulation patterns are responsible for the main transport directions. Localized weather conditions determine deposition sites and to what extent source impacts are registered abroad.

Although long range transport plays an important role in the deposition of heavy metals in the Arctic and Sub-Arctic, local sources can not be neglected. Generally, in areas of high deposition there is a significant local and regional contributor, potentially contributing up to 50%. Recently, mercury levels in halibut sampled during the Alaska Department of Environmental Conservation Fish Tissue Monitoring Study in the Bering Sea have shown a 250% (personal communication Dr. Bob Gerlach, Alaska State Veterinarian) increase in mercury from halibut samples collected in 1969 (Hall et al.: Mercury in Fish and Shellfish of the Northeast Pacific. I. Pacific Halibut, Hippoglossus Stenolepis, Fishery Bulletin: Vol. 74, No. 4). Fish tissue samples taken in the areas around Attu and Adak in the Aleutian Islands have shown the most significant increase, while sampling in the Gulf of Alaska and in South East Alaska did not show the same increase. This local disparity in mercury level trends might indicate impact from unknown local or regional sources. Similar geographic patterns of mercury concentration have been noted in bald eagle eggs, with the highest concentrations in the western Aleutians and lower concentrations in the eastern Aleutians. (Anthony, et. al. 2007; Environ.Tox. and Chem. Vol. 26). Elevated levels of contaminants in Aleutian Island avifauna have been documented, but the great distance from potential industrial sources and the region's complex military history have confounded identification of contaminant origins. (Rocque et al.: Biomonitoring of Contaminants in Birds from two Trophic Levels in the North Pacific, Environmental Toxicology and Chemistry, Vol. 23, No. 3, pp. 759–766, 2004)

The impact on the coastal ecosystem can be significant, mercury levels in some animals is approaching the point of negative health effects. In recent years, increasingly effects have been documented, including behavioral, neurochemical, hormonal, and reproductive changes in fish and wildlife exposed to environmentally relevant levels of methylmercury. (Scheuhammer et. al: Recent Advances in the Toxicology of Methylmercury in Wildlife, Ecotoxicology (2008) 17:67–68,) Back-trajectory analysis coupled with trace metal concentration data might help pinpoint local pollution sources and help quantify a currently unknown or unsuspected local source contribution. Local sources, such as mining operations, industrial development and power production as well as abandoned military installations are potential sources.

The project will expand an existing limited small scale project in Kodiak operated by DEC staff. A wet deposition sampler currently is operated to measure mercury contamination in rain and snowfall. This proposal seeks funding to expand the laboratory analysis of the Kodiak sample to include the following trace metals: lead, cadmium, copper, nickel, zinc, chromium, beryllium, arsenic, and selenium. These compounds are typically found in the exhaust of major stationary sources and have been used to identify

source emission's signatures. In addition, two new wet deposition monitoring sites, one in Unalaska and one in Kotzebue will be established to measure mercury deposition along with the above mentioned trace metal contaminants in rain or snowfall. This Alaska Coastal Deposition Network, consisting of the two new sites and the existing site in Kodiak will be operated using the techniques and quality assurance protocols of the Mercury Deposition Network (MDN), managed by the National Atmospheric Deposition Program. No additional staff time is necessary to operate the Kodiak site. The site in Unalaska will be operated by DEC staff, while the site in Kotzebue will require a private contractor to perform the weekly sampling and maintenance. The budget is based upon a three-year monitoring study in order to define trends and cumulative mass loadings.

The data gathered by the coastal deposition network will be used to determine if deposition is localized or if Alaska's coastal ecosystem is uniformly impacted. As transport of airborne pollution is the major contamination pathway, the data collected should be considered essential for use in preventative ecosystem management. Increases in airborne pollutants will slowly make their way into the ecosystem, thus deposition data can be used to predict future ecosystem impacts, plan mitigation strategies, and assist ecosystem management. In addition, deposition data can be used to develop and corroborate models for mitigation strategies and opportunities.

Working with department and National Weather Service meteorologists and atmospheric scientists, schooled in the analysis of back trajectories, the trace metal and mercury data will be combined with local and global meteorological data to assess long range and short range transport patterns to identify potential local, regional and international source regions. The mercury data will be available on the Mercury Deposition network (MDN) web page. The trace metal data will be stored in a database at the DEC AQ office and will be linked with the mercury and meteorological data. The reports will be shared with the fish tissue monitoring program and any interested parties. A final report will be posted on the DEC web page.

MEASURABLE GOALS AND OBJECTIVES:
Measurable sampling project goals and objectives will be the same for all three project years.

1) Weekly samples will be collected at the three Coastal Alaskan Mercury Deposition Network sites.
2) All samples will be analyzed for mercury, lead, cadmium, copper, nickel, zinc, chromium, beryllium, arsenic, and selenium.
3) All mercury data will be displayed on the national MDN network web page
4) DEC staff will store all mercury and trace metal data in a central data base.
5) Annual data reports will be developed and distributed to interested parties.

In addition in Year 1 two new wet deposition monitoring sites will be set up – one in Unalaska and one in Kotzebue. A contract with the MDN network and the lab analyzing or trace metals will be established. A site operator for the Kotzebue sampling site will be hired. In Year 3, a contract will be established with an atmospheric scientist/university to analyze meteorological models and calculate back-trajectories for the three year sampling

period. In cooperation with DEC and NWS staff, the back-trajectory analysis will be combined with the sampling data to assess transport pattern and mechanism. At the end of Year 3 the sampling sites will de-installed and the instrumentation retrieved if no further funding can be found to keep the site operational. A final report will be made available to all interested parties.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:
This project is consistent with CIAP authorized use #1: *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands*.

This project will yield critical information on weekly levels of air-borne mercury and trace metal contaminants that will provide a basis for understanding and estimating rates at which contaminants are deposited in coastal waters. Such information can be used by resource managers to initiate steps to address contaminant sources in an effort to better protect and ultimately restore the quality of coastal waters. Some possible mitigation strategies to manage or reduce potential source impacts are establishing tighter emission controls, reviewing existing control strategies and ensuring compliance with these controls, and strategically plan, implement and prioritize site clean up of abandoned military installations or other abandoned industrial sites. Understanding and where possible controlling transport and deposition of air-borne contaminants is essential to protecting Alaska's wildlife resources and coastal ecosystems.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:
This data produced in this project can also be tied into a larger statewide network. Independent of the Department's efforts, the National Park Service (NPS) is in the process of establishing three mercury deposition sampling sites, one inland and two along the coast. By the end of CY 2008, the NPS will begin operating one mercury sampling sites; in Bettles, in the Brooks Range, one in Bartlett Cove in Southeast Alaska and one at Katmai National Park. Operation of these NPS sites, the Department's site in Kodiak, and the proposed sites in Unalaska and Kotzebue will provide a comprehensive network for the evaluation of airborne mercury and trace metals entering Alaska's coastal regions, and the first evidence as to how local and distant sources may be impacting Alaska's air and ocean resources. The Division of Air Quality has a good working relationship with the Alaska National Park Service's air quality staff and will share all collected data and coordinate future sampling efforts with the NPS.

COST SHARING OR MATCHING OF FUNDS:
CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER

PROJECT TITLE: **Knik River Public Use Area Erosion Control**

PROJECT CONTACT:

Contact Name: David Griffin
Address: Division of Mining, Land, and Water, 550 West 7th Ave, Suite 900c, Anchorage, AK 99501
Telephone Number: (907) 269-8546
Fax Number: (907) 269-8913
Email Address: david.griffin@alaska.gov

PROJECT LOCATION:
This project is within the Knik River Public Use Area (KRPUA), located approximately 40 miles north and east of Anchorage on the western edge of the Chugach Mountains. The attached map shows the KRPUA.

PROJECT DURATION
4 year

ESTIMATED COST:

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
100,000	25,000	25,000	25,000	25,000

PROJECT DESCRIPTION:
This project seeks to control erosion caused by detrimental impacts of recreational users on trails, streams, wetlands, and lake shores throughout the Knik River Public Use Area (KRPUA). The KRPUA was recently established as a "Public Use Area" in an effort to preserve and protect a full spectrum of public uses, including the maintenance and enhancement of off-road motorized vehicle and non-motorized recreational pursuits. The area has a long history of recreational use due to its close proximity to Anchorage and the Matanuska-Susitna Valley communities of Wasilla, Palmer, and the Butte. These communities are growing at a rapid pace, and along with this growth come impacts from recreational uses, including boating, all-terrain vehicles, hiking, wildlife viewing, biking, hunting, and fishing. The Knik River drainage is popular for hunting moose, Dall sheep, bears, and migratory waterfowl. The area also supports one of the largest Coho salmon fisheries in the Matanuska-Susitna Valley.

Unrestricted multiple-use recreation and unplanned trail development occurring over the years have contributed to significant erosion and degradation of riparian areas and trails

(See attached photographs). The banks and shorelines of lakes and streams have become trampled, destroying vegetation and accelerating erosion into waters used by anadromous fish. Trails created from unrestricted recreational use have been developed without planned construction techniques, contributing to severe erosion problems, impacts to wetland areas, and destabilized stream crossings. These user impacts have lead to poor drainage patterns, bank destabilization, deep rutting, mud holes, widened tread, damage to vegetation, and year-round standing water. A combination of poor trail location and unsuitable terrain has increased erosion and enhanced trail braiding.

In an effort to minimize detrimental impacts to riparian areas and wetlands, the Alaska Department of Natural Resources (DNR) intends to reroute trails to avoid sensitive habitat; alleviate lake shore degradation by hardening access points; stabilize eroding lake and stream banks; improve stream crossings with appropriate structures; and rehabilitate severely degraded wetland areas through trail hardening, closures and/or use restrictions. Proposed projects include shoreline restoration of highly impacted public access points by adding soil, plantings, structures, and signs; stream crossing structures such as bridges or rock fords to reduce erosion and sedimentation of streams; trail reroutes to avoid sensitive habitat; switchback construction on trails with steep gradients; implementation of erosion control structures such as geo block, gravels, water bars, check dams, turnpikes, etc.; restoration of highly degraded wetland areas through closures and/or use restrictions, and/or by providing alternate routes; and regulatory/educational sign placement.

MEASURABLE GOALS AND OBJECTIVES:

Year 1: GPS trails mapping of over 10,000 acres of wetlands and riverbed

Year 2: Restoration and erosion prevention of 6,000 linear feet of trail degraded by motorized and non-motorized recreational use

Year 3: Restoration and erosion prevention of 6,000 linear feet of trail degraded by motorized and non-motorized recreational use

Year 4: Restoration and erosion prevention of 500 linear feet of lake shore (salmon bearing waters) degraded by motorized and non-motorized recreational use

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:

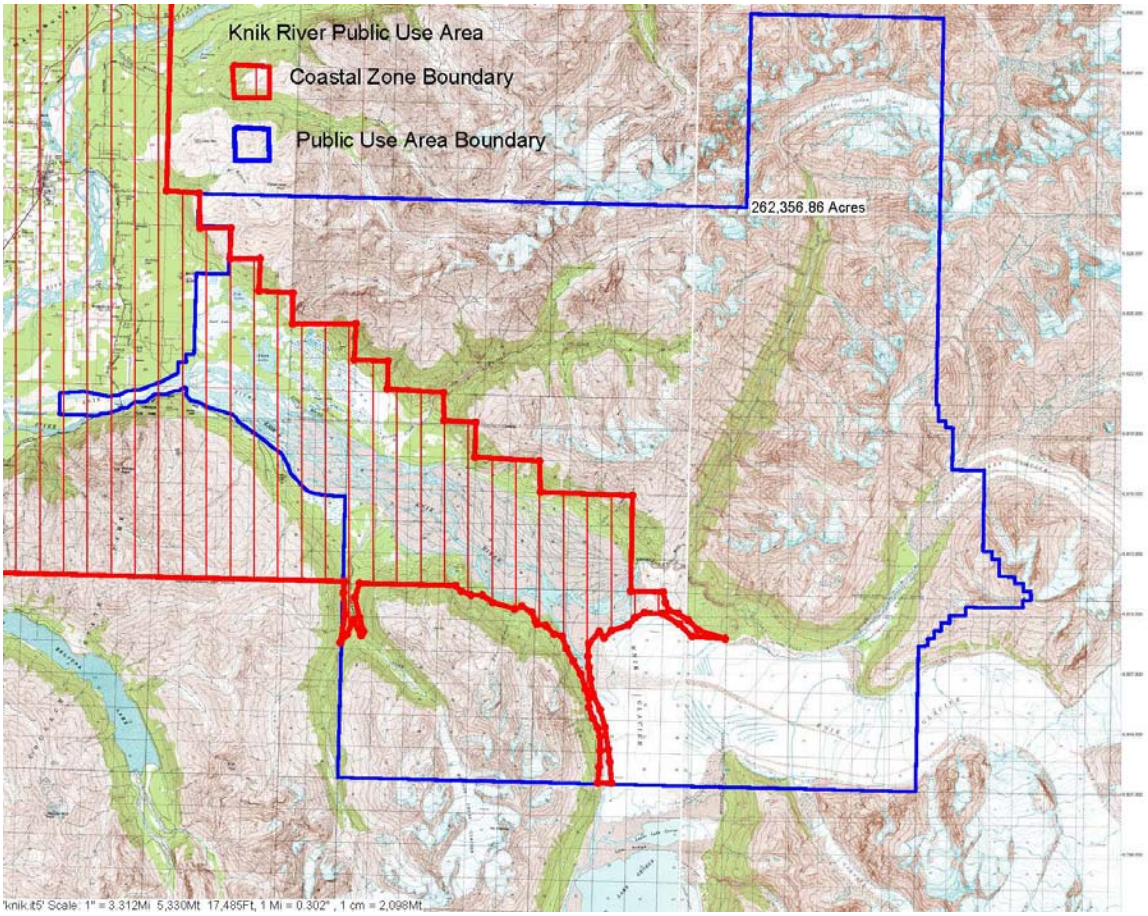
This project is consistent with CIAP Authorized Use #1 - *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* Ecological restoration, tread hardening, erosion control structure installation, and trail rerouting will restore wetlands and improve water quality in adjacent anadromous streams. Work will be done on trails and riparian areas in the coastal zone or on lands near the coastal zone, which drain into and thereby impact the coastal zone.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:

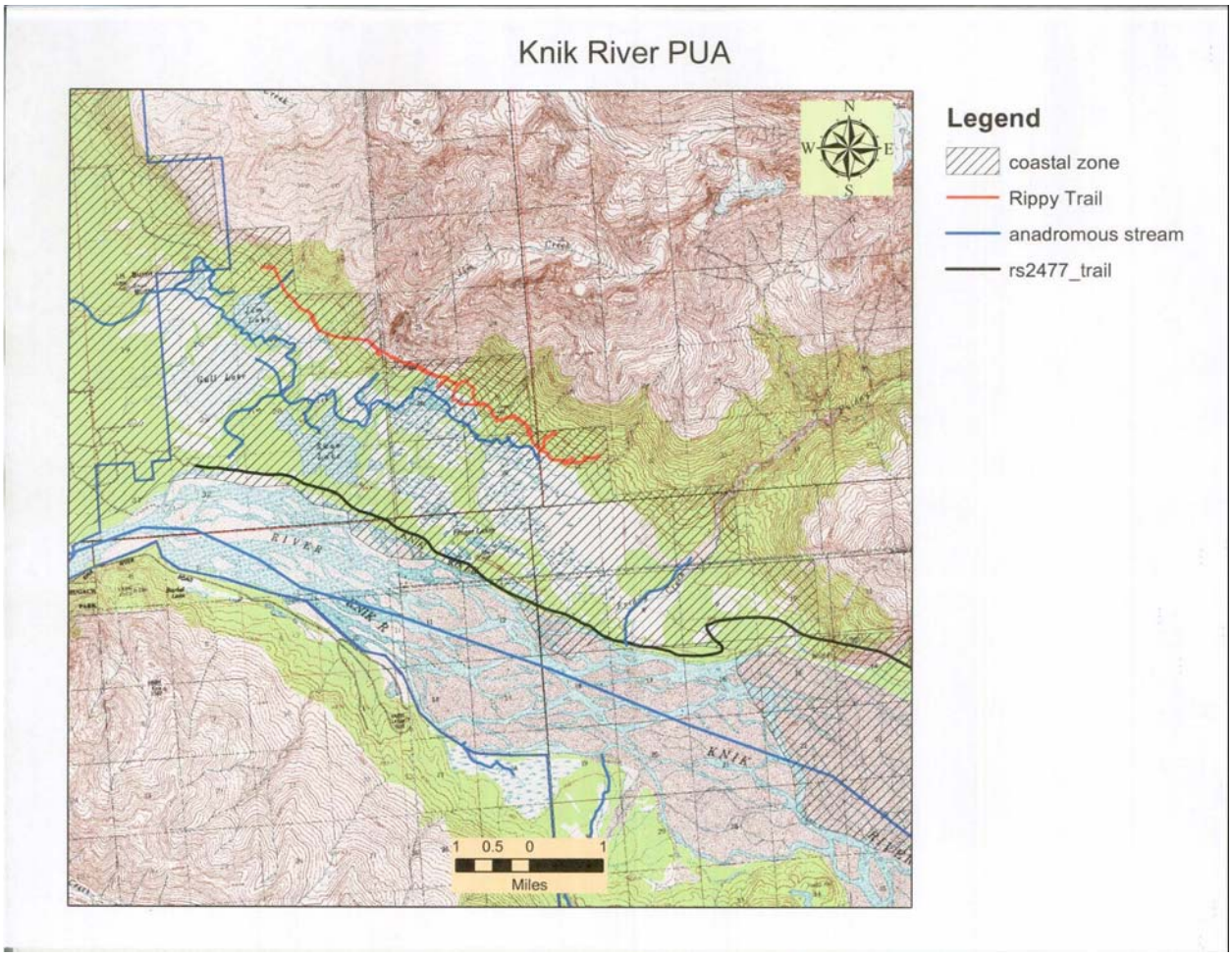
While DNR has not yet coordinated with Federal agencies on this project, The Alaska Department of Natural Resources manages the KRPUA through partnerships with local

law enforcement, other state and federal agencies, non-profit organizations, and local residents. The KRPUA planning boundary encompasses approximately 60,000 acres of federal lands managed by the Bureau of Land Management (BLM). DNR has worked closely with BLM land managers identifying trails for easements and assessing trail impacts on a state owned right of way crossing through their lands. At this time DNR has not secured any other funding, however grants from the Alaska Department of Natural Resources Recreational Trails Program (RTP) may also provide funds for trail related environmental protection, safety and educational projects.

COST SHARING OR MATCHING OF FUNDS:
If CIAP funds are used for cost sharing or matching requirements, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.



Knik River Public Use Area


Knik River PUA
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Legend
coastal zone
Rippy Trail
anadromous stream
rs2477_trail
RIVER
KNIK
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Miles

The following photos depict lake shore and trail impacts occurring within the coastal zone on state owned lands managed by the State of Alaska Department of Natural Resources, Division of Mining, Land, and water, Southcentral Region Land Office.

Knik Glacier Trail (erosion and rutting)

Wetland Recreation Routes (breaking of vegetative mat)

Knik Glacier Trail (standing water)

Rippy Trail (wetlands spur trail)

Rippy Trail (wetlands spur trail)

Jim Lake Public Use Site (anadromous waters)

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER

PROJECT TITLE: Kachemak Bay Drainage Basin Sustainable Access Routes Reservation and Improvement.

PROJECT CONTACT:
Contact Name: Cynthia Zuelow-Osborne
Address: Division of Mining, Land and Water, 550 W. 7th Ave. Suite 900C
Anchorage, AK 99501
Telephone Number: (907) 269-8575 Fax: (907) 269-8913
E-mail Address: Cynthia.Zuelow-Osborne@alaska.gov

PROJECT LOCATION:
Kachemak Bay Drainage Basin

PROJECT DURATION
3 year

ESTIMATED COST:

Spending Estimate ($)			
TOTAL	**Year 1**	**Year 2**	**Year 3**
200,000	50,000	75,000	75,000

As a Tier 2 project, no CIAP funding allocation year is determined. The State of Alaska will identify the funding allocation year in the grant application, if the project is funded.

PROJECT DESCRIPTION:
The objective of the project is to protect the hydrologic and wildlife habitat functions of Kachemak Bay Drainage Basin area wetlands from continued degradation caused by increased development of unplanned and unauthorized motor access trails. Toward this end, the Department intends to locate and reserve legal public trail routes utilizing established and emerging trail sustainability and manageability criteria developed for application in Alaska by the National Parks Service and other expert agencies. The Kachemak Bay Drainage Basin is an environmentally sensitive area surrounded by the Fox River Flats Critical Habitat Area to the south, the Caribou Hills Special Land Use Area to the west, and the Kenai National Wildlife Refuge and Wilderness to the east. Approximately 50% of the proposed project area lies within the boundary of the State's Coastal Zone.

Prior federal and state land disposal programs in the vicinity proposed for service by this project have resulted in the creation of over 300 parcels of residential use lands and the establishment of large tracts of agricultural use lands currently employed for cattle grazing, horse grazing, and hay production purposes. The rate of development activities on private parcels has increased substantially over the past several years, and interest in additional conveyances of public lands in to private hands remains high throughout the region, including near Kachemak Bay. In addition, the Kachemak Bay Drainage area is experiencing increased use as a tourist destination; supporting guided commercial hunting activities as well as popular all-terrain vehicle and horse back tours. The area continues to be relied upon by local residents for personal hunting and fishing purposes. One highly visible impact resulting from accelerated economic and development activities is the proliferation of ATV and snow machine trails along what initially appear to be the quickest and easiest routes across the marshy flats that feed the headwaters of Kachemak Bay. However, attempted regular use of unplanned trail routes through poorly drained wetland meadows quickly results in the formation of impassible, meandering, rutted, muddy areas devoid of vegetation, some of which range to 100 feet wide. These trails contribute to conditions such as channelization, diversion of water from existing streams, sedimentation, and slope failure, which are believed to threaten the local nursery habitat and refugia for important populations of anadromous fish in the adjacent critical habitat area. In addition, the lack of planned access routes within legally established easements is contributing to increased incidents of user-group conflicts including trespass across private lands and unpermitted development of private infrastructure on public use lands. Proposed project components include evaluation of existing trails and disturbed areas, identification of feasible, sustainable access routes, establishment of legal public access easements, and initial installation of appropriate trail hardening materials to encourage regular usage of consolidated, authorized routes; thereby reducing future impacts to the surrounding marsh system and allowing for its recovery.

MEASURABLE GOALS AND OBJECTIVES:

Year 1: Locate, dedicate to public use, at least five linear miles of trail across DMLW managed lands between the Caribou Lake and Fox Creek vicinities of the Kachemak Bay Drainage area.

Year 2: Harden at least 2,500 linear feet of trail.

Year 3: Harden at least 2,500 linear feet of trail.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:

This project is consistent with CIAP Authorized Use number 1 - *projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* The location and dedication of legal public access easements will mitigate the effects of human impacts on the area by reducing the proliferation of randomly chosen individual trail routes. Trail hardening efforts will promote the consolidation of public access activities and protect wetlands in the Kachemak Bay Drainage area from degradation caused by continued, unplanned motorized use, and will allow the wetlands to be restored to a more natural state.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS AND OTHER FUNDING SOURCES:

The Kachemak Bay Drainage Basin project will complement similar trail reservation and improvement efforts in the adjoining Caribou Lake area undertaken by the Homer Soil and Water Conservation District with funding and assistance provided by the National Parks Service; and will contribute to ongoing Kenai Peninsula trail network documentation and improvement efforts funded by prior CIAP allocations in addition to State of Alaska sources (Division of Parks and Outdoor Recreation, Division of Environmental Conservation).

COST SHARING OR MATCHING OF FUNDS:

CIAP monies are not proposed to provide cost sharing or matching funds for other grants.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF COASTAL AND OCEAN MANAGEMENT

PROJECT TITLE: Alaska Coastal Management Program Implementation Workshops

PROJECT CONTACT:

Contact Name: Sylvia Kreel,
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PROJECT LOCATION:
Specific workshop locations have yet to be determined. Locations will be determined based on the location of the target audience.

PROJECT DURATION
3 year

ESTIMATED COST:

Spending Estimate ($)			
TOTAL	**Year 1**	**Year 2**	**Year 3**
105,000	35,000	35,000	35,000

PROJECT DESCRIPTION:
In order to effectively implement the Alaska Coastal Management Program (ACMP), the Alaska Department of Natural Resources (DNR), Division of Coastal and Ocean Management (DCOM) will develop and present workshops to ACMP participants. Alaska Legislative changes in 2003 required DNR to change ACMP regulations and required coastal districts to amend their district coastal management plans. There are currently 28 active coastal districts in Alaska. Each district plan becomes part of the state's federally approved coastal management program after approval from the National Oceanic and Atmospheric Administration, office of Ocean and Coastal Resource Management (OCRM). The regulatory changes have increased the need for training. ACMP participants include state and federal resource agencies, coastal districts, project applicants and the public. The workshops will specifically focus on presenting tools to improve program implementation. Examples of potential workshops include:

- Partnership/relationship building between ACMP participants
- Designated areas

- District implementation workshops
- Coastal Resource Service Area board workshops

MEASURABLE GOALS AND OBJECTIVES:
DCOM will present at least one implementation workshop each of the 3 years. DCOM will prepare binders for each workshop that will include the workshop agenda, participant list, presentations and handouts. DCOM will post the binders on the ACMP website.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:
Authorized Use # 4: *Implementation of a federally-approved marine, coastal or comprehensive conservation management plan.*

This project will comply with CIAP Authorized Use # 4 because it will develop and present information and tools to ACMP participants that will assist the participants in implementing the ACMP, a federally approved coastal management program. The ACMP involves coastal districts, state and federal resources agencies, and the public in district plan development and project consistency review. Each workshop presented will target specific ACMP participants and specific implementation components addressed in the ACMP.

In the past, DCOM has regularly conducted implementation workshops. They have proven a valuable means of improving program implementation. For example, DCOM provided several workshops on how to amend district coastal management plans. These workshops provided valuable guidance to local district planners on how to craft approvable enforceable policies. DCOM regularly provides districts and agencies information on how to effectively participate in the ACMP and comment on development projects occurring in the coastal zone. Over the years, such workshops have led to greater participation by ACMP stakeholders and more effective implementation of the ACMP. In light of the revised program changes since 2003, as well as the continuous need to train new stakeholders, additional workshops funded through CIAP will continue to enhance ACMP implementation`.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS
Federal 306 and 309 funds have typically funded implementation workshops. However, these funding sources have decreased in recent year. By using the CIAP funds for workshops, DCOM can reprogram grant funds to other uses. OCRM annually approves how the state uses Federal 306 and 309 funds. The National Marine Fisheries Service, U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers regularly participate in ACMP project consistency review. Staff from these agencies will be invited to agency oriented workshops.

OTHER FUNDING SOURCES:
CIAP funds will not be used for cost sharing or matching purposes.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF COASTAL AND OCEAN MANAGEMENT

PROJECT TITLE: Marine Debris Clean-up

PROJECT CONTACT:
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PROJECT LOCATION:
Yet to be determined.

PROJECT DURATION
3 year

ESTIMATED COST:

Spending Estimate ($)			
TOTAL	Year 1	Year 2	Year 3
99,000	33,000	33,000	33,000

BACKGROUND:
During the Alaska Coastal Management Program Northern District Workshop and Coastal Resource Service Area Board Training, many districts' greatest concern was problems associated with marine debris. According to the U.S. Commission on Ocean Policy, marine debris poses a "serious threat to fishery resources, wildlife, and habitat, as well as human health and safety." The communities around Alaska are unique in that using the coastal waters is not just a commercial activity or recreational opportunity, but rather a way of life. Marine debris threatens this way of life.

PROJECT DESCRIPTION:
The Division of Coastal and Ocean Management (DCOM) will partner with the Marine Conservation Alliance Foundation (MCAF) to plan, coordinate and attend marine debris cleanups in three coastal districts where marine debris is documented by the MCAF. Personal service funds to pay for DCOM staff hours will be used to coordinate and plan the clean-ups with the coastal district contacts and the MCAF. The travel funds will be used for DCOM staff to travel to the districts to participate and conduct the coordination of the cleanups. The marketing/publication funds will be used to advertise the event and to document the results. The contractual funds will be used to fund the pickup and removal of the debris collected.

Previous marine debris removal projects in Alaska have proven very successful. MCAF used 2001 CIAP funds to complete the following marine debris clean up projects:

Norton Sound
Marine Conservation Alliance Foundation (MCAF) contracted with the Norton Sound Economic Development Corporation (NSEDC) on several projects in the Norton Sound area, two of which were completed in 2007. A summertime cleanup around Shaktoolik removed 45,150 pounds of debris including nets of both domestic and foreign origin. The total area of beach is not yet reported. The project was contracted at $32,994 and paid for with funds provided by the 2001 CIAP funding in lieu of previously authorized funding from the National Oceanic and Atmospheric Administration (NOAA).

NSEDC crews finished cleanup work begun last year near Unalakleet, where they removed 107,000 pounds from south of the village. The debris included 16 derelict skiffs, some up to 24 feet in length; several abandoned snow machines and all-terrain vehicles, and over 195 nets. The Unalakleet project was budgeted at $17,832 and was also funded by 2001 CIAP funds in lieu of previously authorized funding from NOAA.

Unalaska
The Qawalangin Tribe of Unalaska was contracted to clean road accessible beaches around Unalaska such as Summer Bay, Humpy Cove and Morris Cove. A small crew spent several weeks on the cleanup work and reported accumulations of less than 2,000 pounds. Among the debris picked up were a computer monitor and a washing machine. Billing came to $8,578 and was paid for by 2001 CIAP funding in lieu of approved NOAA funding.

MEASURABLE GOALS AND OBJECTIVES:
DCOM will coordinate and participate in a minimum of three marine debris cleanup projects (one each project year). Each clean up will be documented in a report noting the date, location, participants, tonnage of removed debris and any associated marketing material developed for the event.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:
This project is consistent with CIAP Authorized Use number 1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetland,* because it will provide conservation and restoration of coastal areas. Recent research has proven that debris has serious effects on the marine environment, marine wildlife, the economy and human health and safety. In fact, marine debris has become one of the most widespread pollution problems facing the world's oceans and waterways, and derelict fishing gear, including nets, lines, and buoys, is especially problematic in Alaska. Marine debris can entangle marine mammals and seabirds. Lost fishing gear can entrap fish. Colored plastics mistaken as food clog digestion tracks of seabirds and marine mammals. Removal of this debris would protect wildlife from such impacts. Additionally derelict boats and other motorized vehicles found in coastal areas erode and often

leak fluids contaminating coastal habitats. There removal will help protect, preserve and restore such coastal areas.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:
The clean-ups will be completed in collaboration with funding from MCAF. The science and research Director, of the NOAA Alaska Fisheries Science Center helps advise the MCAF board. NOAA provides much of the funding for MCAF marine debris clean up efforts. CIAP funding will supplement this NOAA funding, with MCAF coordinating the projects.

There is a possibility that districts will provide in-kind donation of services to help coordinate the clean-ups as this was the case during the 2007 marine debris clean-ups.

OTHER FUNDING SOURCES:
CIAP funds may be used for cost sharing or matching purposes required by another grant. If they are used in this manner, a letter will be included with the CIAP grant application from the other Federal agency (the agency charged with administering the program that includes the cost sharing or matching requirement) indicating that the other agency's program allows the use of Federal funds to meet cost sharing or matching requirements.
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STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game
Division of Subsistence

PROJECT TITLE: Yukon-Kuskokwim Delta Community Subsistence Observation Network

PROJECT CONTACT

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PROJECT LOCATION

The Ceñaliulriit Coastal Resource Service Area (CRSA) is the coastal management district which encompasses the Yukon Kuskokwim Delta area, and the communities with in it. This project will take place in 11 communities located within the coastal zone within the Ceñaliulriit CRSA including Akiachak, Bethel, Chevak, Kotlik, Mountain Village, Nunam Iqua, Platinum, Russian Mission, and Toksook Bay. Data on coastal fish and wildlife resources and the environment will be collected throughout much of the coastal management district due to the extensive subsistence uses of the region.

PROJECT DURATION

This project will take 4 years to complete.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$2,039,400	$548,600	$455,600	$440,500	$594,700

PROJECT DESCRIPTION

This project will improve understanding of fish and wildlife resources that are potentially impacted by resource development activities in the Bering Sea. Systematic documentation of coastal community environmental information to enumerate fish and wildlife harvests, document local observations of changes in the environment, including resource population dynamics, animal health and condition, seasonal and geographic resource distribution, detection of invasive species, and map community subsistence resource and land use patterns will improve knowledge of species of conservation concern. Such baseline data also will assist in developing strategies to mitigate potential effects of resource development and assist in the sustainable management of the environment and public resources.

During the past three decades, the ADF&G Division of Subsistence's research program has documented community patterns of fish and wildlife harvest and use, including local knowledge about fish and wildlife habitats and ecosystem changes throughout much of Alaska; however, the Yukon-Kuskokwim Delta, with an estimated human population of 23,202 in 2007, represents the most significant information gap in Alaska. Of the 39 Yukon-Kuskokwim Delta communities within the coastal management district, comprehensive baseline information on fish and wildlife resources important to subsistence uses has been documented for less than 2% of the communities. Based upon this limited information, however, this region represents the largest per capita harvest and use of fish and wildlife resources in Alaska with an estimated 664 pounds per person per year compared to a statewide average rural Alaska harvest of 375 pounds per person per year. This project will result in documenting comprehensive subsistence baseline information and local environmental observations from 11 communities, which also will serve as proxies for similarly situated communities in the coastal management district for which limited or no information exists.

This project will result in systematic household surveys and interviews with approximately 1,491 households in 11 Yukon-Kuskokwim Delta communities. Local subsistence users have maintained close ties to the environment for generations in order to effectively utilize fish and wildlife resources that are vital to the mixed subsistence-market economies characteristic of Yukon-Kuskokwim Delta communities. As a result, systematic documentation of this local and traditional ecological knowledge provides local, state, and federal governments and organizations with a network of environmental observations and quantitative and spatial data that will assist in evaluating and monitoring environmental impacts associated with development activities and a changing climate.

This project will take place over 4 years. Year 1 activities will focus upon soliciting all 11 community approvals to participate in the project with the assistance of the regional Alaska Native non-profit tribal organization, the Association of Village Council Presidents (AVCP). Year 1 activities also will include the selection and training of community-based research assistants to commence household harvest surveys and mapping interviews in 3 or 4 of the 11 communities and commence data entry and analysis. Year 2 activities will focus on initiating data collection in 3 or 4 additional communities and finalize data analysis of information collected during Year 1 and commence data entry and analysis of Year 2 data. Year 3 activities will focus on initiating data collection in the remaining communities and completing the data analysis of Year 2 data and most of Year 3 information. Year 4 activities will finalize any remaining data analysis and focus on interpreting research results and finalizing research findings in a written technical report, conduct community reviews of research findings with the assistance of AVCP, and disseminate research results through a web-accessible Community Subsistence Information System and a geodatabase of spatial environmental information.

MEASUREABLE GOALS AND OBJECTIVES

Specific outcomes of this project will include a comprehensive technical report on research results as part of the ADF&G Division of Subsistence's web-accessible Technical Paper series, comprehensive community harvest information in the division's web-accessible Community Subsistence Information System, and maps of community resource and land use activities and environmental observations in a forthcoming web-accessible geographic information system

(geodatabase) by the end of Year 4. This comprehensive research project is not associated with annual measurable outcomes as data collection, data analysis and interpretation will take place on an ongoing basis throughout the life of the project culminating in the final measureable outcomes as outlined above.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP authorized use number 1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* This project will provide resource managers with baseline information necessary to develop mitigation measures to protect coastal areas and mitigate impacts to fish and wildlife when reviewing potential development projects.

This project will provide valuable information pertaining to subsistence uses. The information will be used by resource managers during project review in order to assist them in ensuring that impacts to subsistence uses are avoided or minimized.

This research also will serve to provide detailed data pertaining to subsistence uses of the Yukon-Kuskokwim Delta as authorized in the Yukon Delta National Wildlife Refuge Comprehensive Conservation Plan (CCP) approved in 1988 and inform its ongoing revision scheduled for completion in the summer of 2011.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Coordination between ADF&G Division of Subsistence and the federal Office of Subsistence Management is an ongoing activity given that research results associated with projects like that proposed here are important to both state and federal fish and wildlife management and comprehensive conservation planning and management programs. ADF&G Division of Subsistence also has coordinated with Tammy Davis, Project Leader for the Invasive Species Program in the ADF&G Division of Sport Fisheries, in order to deploy that program's invasive species detection protocols.

COST SHARING OR MATCHING OF FUNDS

CIAP funds associated with this project will not be used for cost sharing or matching purposes.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game
Wildlife Conservation

PROJECT TITLE: Assessment of Ice Seal Populations Using Biological Samples from the Subsistence Harvest in Alaska

PROJECT CONTACT

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PROJECT LOCATION

Alaskan coastal villages along the Beaufort, Chukchi, and Bering Seas including but not limited to Wainwright, Point Hope, Shishmaref, Diomede, Gambell, Savoonga, and Hooper Bay.

PROJECT DURATION

The four year duration of this project will provide baseline information on the population status and health of four species of ice seals.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$1,368,000	$326,989	$336,799	$346,902	$357,310

PROJECT DESCRIPTION

This study is designed to use biological samples from the subsistence harvest of ice seals to assess the health and status of the populations of all four species in areas of oil and gas activities. This information is required in order to develop mitigation measures for ice seals in the marine waters of Alaska important for oil and gas development.

All four species of ice seals in Alaska (ribbon, ringed, bearded, and spotted) have been petitioned to be listed as threatened or endangered under the ESA due to diminishing summer sea ice. Population estimates, population trends, and harvest estimates are not available for any of these species. Therefore, other means are required to assess the health and status of these populations. Ice seals are important subsistence species that are harvested regularly by Alaska Natives in coastal communities and biological samples are available from the hunters. The collection and analysis of samples from the harvest allow us to assess the health and status of these populations and determine whether changes are occurring and whether those changes may be due to climate change, industrial activities, a combination of the two, or other factors. Biological samples and measurements are collected from all four species of sea ice-associated seals. Samples include

teeth (age); liver, kidney, blubber (contaminants); stomach (prey items); female reproductive organs (productivity); blood (disease screening); and heart, lung, liver, intestine, and gall bladder (parasites). Measurements include length, girth, and blubber thickness for body condition and size at age (growth) assessment. The goal of this project is to collect and analyze samples that provide information on the status and health of these seal species because no population abundance or trend information is available. Without information from this project, population level changes in body condition, productivity, and/or growth rates would not be detected before significant declines in population abundance had already occurred, precluding the opportunity to address those changes. Development of successful mitigation measures require information regarding population status and the affects of changes in sea ice that are provided by this project.

We work with the Alaska Native co-management organization responsible for ice seals (i.e., the Ice Seal Committee) and coordinate with regional and local governments (e.g., North Slope Borough, Kawerak, Maniilaq, and the Association of Village Council Presidents) for approval before working with the communities and the hunters. In Year 1 we will continue to work with at least seven communities to collect biological samples from harvested seals. Once we have community approval we work out the details of collecting samples. Samples are collected by hunters or their wives who are trained to collect the samples, and by biologists depending upon the situation and preferences of the communities. Samples are frozen and shipped to Fairbanks to be processed in the ADF&G laboratory. Some tissues are sub-sampled and sent to other locations for analysis (e.g., contaminants, genetics, disease screening, and parasites). Some tissues are archived (e.g., University of Alaska museum and Alaska Marine Mammal Tissue Archival Project), and some tissues are shared with other researchers. Stomach contents are sorted, prey items are identified and reproductive tracts are analyzed for number of pregnancies and age at reproductive maturity. Annual collections at the same locations allow us to identify changes through time. This type of project relies on long-term relationships and takes time to develop so that samples can be collected reliably. We have been working in the same communities most recently since 2000 but ADF&G has worked with these same communities since the 1960s.

In order to maximize biological samples for analysis, we do not collect harvest information during this project. There are concerns in some communities regarding the reporting of the number and species of seals harvested. The concerns include that reporting community harvest will provide information that will be used to restrict the harvest. Harvest monitoring is a separate project with different objectives, approvals, and issues.

MEASUREABLE GOALS AND OBJECTIVES

The goal of this project is to collect and analyze samples that provide information on the status and health of these seal species because no population abundance or trend information is available. Without information from this project, population level changes in body condition, productivity, and/or growth rates would not be detected before significant declines in population abundance have already occurred, precluding the opportunity to address those changes. In order to mitigate damages to marine mammals we must be able to identify when damage has occurred and what its cause might be.

This project has been ongoing since 2000 and has provided baseline information on vital rates of four species including body growth rate, body condition, productivity, contaminants, diet, and disease. This project has resulted in many reports, presentations, and several scientific publications. There is also a historic data set collected by and housed at ADF&G that provides information for the same parameters through much of the 1960s, 1970s, and 1980s. These historic data are extremely valuable for retrospective comparisons.

For example in 2008, we compiled recent and historic data for ribbon seals to assist National Marine Fisheries Service (NMFS) in conducting a status review required to address a petition to list ribbon seals as threatened under the Endangered Species Act (ESA). Using data from this project and the historic database collected through five decades we found that ribbon seals grew faster and had better body condition in the 1970s than in the 1960s or in the 2000s. The 1960s and 2000s however were similar, indicating that diminishing summer sea ice had not affected ribbon seal growth rate or body condition in the 2000s differently than the conditions that existed in the 1960s; before the affects of climate change were in evidence. We will provide reports and related publications for the other three petitioned species (spotted, ringed, and bearded seals) using data from this project and the historic dataset.

We have established a baseline for contaminants in ice seals in Alaska and this project allows us to monitor changes in those levels through time. Some compounds such as DDT and PCB that are no longer in use should begin to decline, however others such as PFC and PBDE may still be increasing. Metal concentrations may increase in seals that feed near oil drilling activities due to cuttings, disturbance of the bottom during drilling, and the use of drilling mud.
In addition to contaminants, we have established growth rates, reproductive rates, body condition, and disease exposure by decade for comparison. This is an extremely valuable data set for detecting and evaluating changes and determining causes of change.

Our annual objectives for this project are to collect samples from as many harvested seals as possible in order to achieve robust sample sizes to determine results that can be compared through time. Long-term studies are extremely rare especially in the Arctic and funding for four years of data collection and analysis will be a significant contribution to understanding the biology and status of these little known species, which can be used to develop measures to minimize the effects of oil and gas activities.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP authorized use number (1) *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands*. In order to minimize impacts to wildlife we must be able to identify when damage is likely to occur and what its cause might be. This project uses biological samples from marine mammals living in arctic marine waters of importance for oil and gas exploration and development to establish baseline values for health and population status which can be compared to the past to determine if and why damage has occurred so that future damage can be minimized. By establishing baseline concentrations of metals in liver samples of harvested seals we can compare levels in seals harvested near active oil and gas drilling operations to seals harvested elsewhere to determine if increased concentrations are caused by feeding near drilling areas. If they are, then mitigation measures can be developed to protect the seals by decreasing exposure to those metals

by using different mud or by disposing of mud differently. On the other hand, many metals occur naturally in the marine environment and the concentrations found in seal tissues in the drilling area may not be elevated relative to the region and therefore no mitigation would be necessary.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

We coordinate with National Marine Fisheries Service and report our results at Ice Seal Committee (co-management) meetings. This project is the only one of its kind and does not duplicate efforts. We provide samples to other research projects to extend the use of the samples beyond our objectives.

COST SHARING OR MATCHING OF FUNDS

CIAP funds for this project will not be used for cost sharing or matching purposes.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Department of Fish and Game, Division of Wildlife Conservation

PROJECT TITLE: Monitoring the Harvest of Four Species of Ice Seals in Alaska

PROJECT CONTACT

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PROJECT LOCATION

Alaskan coastal villages along the Beaufort, Chukchi, and Bering Sea coasts.

PROJECT DURATION

The four year duration of this project will provide harvest data and local knowledge regarding seal harvest for four species of ice seals in up to 20 communities.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$655,785	$139,080	$153,045	$172,140	$191,520

PROJECT DESCRIPTION

This study is designed to record the annual harvest of four species of ice seals and collect local knowledge regarding changes in seal availability, distribution, behavior, health, and harvest patterns in order to determine the causes for such changes. By monitoring harvest annually we will better understand how harvest is affected by economics, weather, climate, seal distribution, seal population size, and industrial activities. The information collected during this study will be important to assess what mitigation measures are needed to account for subsistence activities in marine waters important for OCS oil and gas development.

Ice-associated seals are extremely important to coastal communities for food, oil and skins. More than 30,000 Alaskan residents living in over 60 communities along the western and northern coast of Alaska harvest or share the harvest of ice seals. The size and trend of ice seal populations are unknown. Knowing the magnitude, sex, and relative age of the harvest can help determine a minimum population size and the demographic structure of the population.

There is no statewide effort to collect harvest information for ice seals. Instead, various one to three year projects have collected harvest information when and where funding has been available. This information is important but incomplete and does not allow for analysis of trends in harvest over time. For example, the reliance on ice seals may increase as prices for food and

fuel increase. Oil and gas exploration and marine traffic for cargo and tourism are increasing across the range of ice seals. Such activities could alter the movement and distribution of ice seals and limit their availability to hunters. Simultaneous changes in sea ice could also have a significant affect on the distribution and availability of ice seals. Although hunters may know they are getting fewer seals, without documentation there is no way to show a reduction in harvest has occurred or evaluate its cause. Documenting the reliance of each community on ice seals is important if changes in the environment alter the availability or accessibility of seals. Monitoring the harvest of ice seals has been identified as a priority by the native co-management group, the Ice Seal Committee (ISC), the National Marine Fisheries Service (NMFS), and the Marine Mammal Commission.

This project will record the annual harvest of the four ice seal species (bearded, ringed, spotted, and ribbon) in as many as 20 villages in order to document the needs of subsistence users throughout the species' ranges in Alaska. By monitoring harvest in conjunction with local knowledge annually we will better understand how harvest is affected by economics, industrial development, weather, climate, seal distribution, and seal population size.

Surveys will only be conducted if the local governing body (i.e., traditional council, village council, IRA) agrees to participate and approves the survey. To collect harvest data, local people will be hired and trained to conduct voluntary household harvest surveys. The surveys will record the harvest of ice seals by species, age, sex, and month and will include seals that were shot but not retrieved. All survey information is reported as community totals, not by individual household. Household information will be kept confidential and the surveys will be voluntary. Questions regarding seal accessibility, distribution, behavior, and health, as well as economic factors, weather, and ice conditions will record local factors that may affect harvest.

Harvest survey results from this project and results from any other efforts statewide will be compiled into an annual report of ice seal harvest in Alaska sponsored by the ISC. This report will be presented to all participating communities as well as communities interested in collecting harvest information. Ice seal harvest numbers are necessary for the National Marine Fisheries Service (NMFS) to determine the level of "annual human-caused mortality and serious injury," which combines harvest, incidental take from commercial fisheries, and other activities causing death or injury to the species. NMFS compares this value to the potential biological removal (PBR) which is the number of animals removed beyond which the mortality is unsustainable. Currently, there is not enough information to calculate PBR and only information from incidental commercial fisheries interactions is available to calculate mortality and injury. Harvest data (magnitude, sex and relative age of each species) will contribute to what is known about minimum population size and the demographic structure of the populations.

We work closely with the ISC who will use the data in their co-management responsibilities with NMFS. Regional organizations such as the Bristol Bay Native Association and Association of Village Council Presidents have been partners and will likely continue to collaborate on this project. The local governments and/or traditional councils will be consulted for local survey approval and survey design including recommendations for who the local surveyors should be. Surveys will only be conducted if the local governing body (i.e., traditional council, village council, IRA) agrees to participate and approves the survey.

This project is the continuation of a project that has succeeded in establishing ice seal harvest surveys in the Bristol Bay communities of Togiak and Twin Hills. We worked with Bristol Bay Native Association (BBNA), Togiak Traditional Council, and Twin Hills Traditional Council to initiate the surveys. This collaboration has been positive and central to our success. We have also begun to work with Quinhagak and Hooper Bay in the Yukon-Kuskokwim Delta region. Our collaborators for these villages are the Association of Village Council Presidents (AVCP), the Native Village of Kwinhagak, the Hooper Bay Traditional Council, and the Paimiut Traditional Council. We encourage this participation and look forward to working with local people and organizations. We consulted with the Subsistence Division within ADF&G on survey form design and data analysis issues. All projects are done in coordination with the ISC to ensure that the harvest monitoring strategy is consistent with their priorities.

The importance of marine mammal subsistence hunting has been a key factor in mitigation measures for the potential impacts related to oil and gas development; e.g., the nearshore buffer for MMS lease sale 193 in the Chukchi Sea was based in part on recognition of subsistence activities. This study will record the annual harvest of the four ice seal species and also document the subsistence needs of communities throughout the seals' range in Alaska. Further, the study will collect local knowledge on changes in seal abundance, distribution, behavior, and health, as well as changes in harvest patterns over time and the possible causes for such changes. Combined, the information collected from this study will be important to assess how mitigation measures need to account for subsistence activities.

MEASUREABLE GOALS AND OBJECTIVES

This project will result in harvest survey results. Harvest survey results from this project and any others will be compiled into an annual report of ice seal harvest in Alaska sponsored by the ISC. This report will be presented to all participating communities as well as communities interested in collecting harvest information. Ice seal harvest numbers are necessary for NMFS to determine the level of "annual human-caused mortality and serious injury," which combines harvest, incidental take from commercial fisheries, and other activities causing death or injury to the species. NMFS compares this value to the potential biological removal (PBR) which is the number of animals removed beyond which the mortality is unsustainable. Currently, there is not enough information to calculate PBR and only information from incidental commercial fisheries interactions is available to calculate mortality and injury. Harvest data will provide a significant contribution to what is known about population abundance and dynamics of ice seals.

In addition to the harvest information, local information regarding changes in seal availability, distribution, behavior, and health, as well as economic factors, weather, ice conditions will be compiled and summarized in the reports in order to interpret changes in harvest patterns over time, determine the causes for such changes, and develop mitigation measures as needed.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP authorized use number (1) *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* The importance of marine mammal subsistence hunting has been a key factor in mitigation measures for the

potential impacts related to oil and gas development; e.g., the nearshore buffer for MMS Lease Sale 193 in the Chukchi Sea was based in part on recognition of subsistence activities. This study will record the annual harvest of the four ice seal species and also document the subsistence needs of communities in areas of importance to oil and gas development in Alaska. Further, the study will collect local knowledge on changes in seal abundance, distribution, behavior, and health, as well as changes in harvest patterns over time and the possible causes for such changes. Combined, the information collected from this study will be important to assess what mitigation measures are needed to account for subsistence activities in marine waters important for OCS oil and gas activities. These mitigation measures will reduce the impacts on subsistence resources and will result in a benefit to the natural coastal environment.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Harvest information collected by this project will be reported to the ISC who will work with NMFS as part of their ice seal co-management responsibilities to determine how to best use the information.

COST SHARING OR MATCHING OF FUNDS

CIAP funds for this project will not be used for cost sharing.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Office of History and Archaeology, Alaska Division of Parks and Outdoor Recreation

PROJECT TITLE: Identification and Characterization of Archaeological and Historical Sites for Conservation Planning in Coastal Alaska

PROJECT CONTACT

Contact Name: J. David McMahan, State Archaeologist
Address: 550 W. 7th Avenue, Suite 1310; Anchorage, AK 99501
Telephone Number: (907) 269-8723
Fax Number: (907) 269-8908
Email Address: dave.mcmahan@alaska.gov

PROJECT LOCATION

This project will inventory, collect baseline data, and assess the condition of and threats to historical and archaeological heritage sites along the coastlines of western and southern Alaska. The project will cover coastal regions within five OCS planning areas: Norton Basin, St. Matthew Hall, North Aleutian Basin, Kodiak, and Gulf of Alaska. Based upon the analysis of existing data, specific segments and sites for field investigations will be selected from each area and prioritized on the basis of pre-determined criteria discussed under "Project Description."

PROJECT DURATION

Four years.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
987,800	243,400	248,500	247,950	247,950

PROJECT DESCRIPTION

Introduction and Statement of Need:

Alaska's 44,500 miles of coastline and vast coastal zone contain a majority of the state's non-renewable archaeological and historical resources, Cultural resources located within the dynamic coastal zone are especially vulnerable to damage or loss through human and natural forces. For example, the rising sea level predicted for the next few decades from global climate change will alter the shape of coastline, speeding erosion and submerging or destroying many cultural sites. The Technical Work Group on Health and Culture, a support group for the Governor's Panel on Climate Change, has identified the erosion of cemeteries and archaeological sites as one of the top five (of 20) options for policy recommendations. Earthquakes, tsunamis and the cumulative effects of ocean storms continuously threaten sites. Alaska's changing economy has left increasing numbers of historic sites associated with fishing, mining, fur, and lumber industries abandoned and decaying. Current and future development in oil and gas, mining, renewable

energy, aquaculture, and other projects potentially threaten cultural resources. At present, OHA does not have a dedicated maritime heritage program or the expertise to effectively manage maritime resource types. This project begins to address this deficit and permanently enhances Alaska's capacities to manage and conserve maritime and coastal cultural resources.

Cultural Heritage in the Coastal Zone: Significance and Threats:
Much of the story of Alaska is preserved in the archaeological and historical sites and maritime cultural landscapes that different groups have left along Alaska's coastal zone. For thousands of years, the majority of Alaska's population has lived along or near the coastal zone where proximity to the sea and major rivers meant ready access to natural resources. Some of the species of marine mammals, fish, and shellfish that provided subsistence to native Alaskans became the foundation for the Alaskan economy during the Russian period. With the coming of American rule, the industrialization of fisheries, particularly salmon, transformed Alaska's coastline. Old villages and fishing encampments from Ketchikan to the Yukon River became the sites of the large canneries that defined many of Alaska's coastal communities for generations. The harbors and piers that supported fishing also provided critical infrastructure that connected Alaska's coastal communities with one another and to the continental U.S. During the gold rush era, Alaska's coastal waters brought tens of thousands of prospectors to places such as Skagway and Nome. Lumber, mining, tourism and oil all continue to depend in various ways on the coastal ocean and the rivers that drain into it. The significance of Alaska's maritime resources, along with increasing use of coastal wasters for transportation and strategic value, attracted the attention of the federal government whose various agencies built lighthouses, charted the coastline, funded harbors, and established military bases along the coast.

With more than half the nation's coastline, an estimated 3,000 shipwrecks, a large but unknown number of other submerged coastal sites, and lack of a dedicated maritime archaeology program, the state will again partner with NOAA and other organizations to selectively investigate a few carefully chosen underwater sites such as near-shore historic shipwrecks. Little is currently known of Alaska's vast submerged heritage, or the effects of changing climate (i.e., shifts in currents, biota, and ocean chemistry). In recent years, OHA has partnered with NOAA, SEA, MMS, East Carolina University, the University of Alaska Fairbanks, and recreational divers to begin collecting baseline data for submerged heritage sites. Examples of partnerships may be found at:

http://oceanexplorer.noaa.gov/explorations/06alaska/welcome.html,
http://dnr.alaska.gov/parks/oha/seshipwreck/seshipwrk.htm,
http://sanctuaries.noaa.gov/maritime/expeditions/hassler/mission.html,
http://sanctuaries.noaa.gov/maritime/expeditions/kadyak.html,
http://www.cdnn.info/industry/i040908/i040908.html, and
http://www.homernews.com/stories/071608/news_1_002.shtml.

Project Description:
This project consists of three segments: 1) Inventory, collect baseline data, and assess threats to historical and archaeological sites (cultural resources) along the coastlines of western, southern, and southeastern Alaska. 2) Education and outreach programs and partnership building to promote the conservation and public stewardship of Alaskan coastal and maritime heritage resources. 3) A final report synthesizing project results and providing recommendations and

tools for managers and environmental planners dealing with the coastal zone. For this project, OHA will partner with the Sea Education Association and the NOAA Maritime Heritage Program. Other partnerships will be developed after initial data analysis and the selection of specific segments for field investigation. Letters from some potential partners, including the NOAA Maritime Heritage Program; U.S. Forest Service; Bureau of Land Management; National Park Service, Lake Clark National Park and Preserve; U.S. Fish and Wildlife Service; Kenaitze Indian Tribe, Kenai, Alaska; and Cook Inlet Regional Citizen's Advisory Committee have been received and are available upon request.

Methods**:**
Before initiating fieldwork in each region, the principal investigators will analyze existing data sources to identify subsets of known sites and coastal segments that lack accurate or up to date information. Sites and coastal segments within these subsets will be prioritized for investigation based on cumulative application of the following criteria:

(1) presence of exposed intertidal components
(2) threats from development, climate change, or cumulative environmental effects
(3) proximity to coastal segments identified under a Geographic Response Strategy for hazardous substance releases
(4) proximity to Alaska Coastal Zone Management Program critical interest areas
(5) classification as a maritime landscape property or feature
(6) importance to ongoing scientific research;
(7) potential as an ecological hazard
(8) capacity of managing agency to protect the resource
(9) logistical feasibility and cost effectiveness
(10)proximity to other priority sites and coastal segments

Field methods will include visual reconnaissance using boats, shoreline walking, review of aerial data and/or over flight; collection of GPS coordinates, shape files, and digital images for integration into GIS datasets; selective collection and analysis of biotic, sediment, and C-14 samples; collection and analysis of artifacts considered threatened or of particular scientific or interpretive value; visual survey of select submerged sites using SCUBA or remotely operated vehicles; and placing of "protected" markers on some sites to discourage ongoing vandalism. Post-field methods will include a review of field data; supplementary historic and archival research; the entering of site data and materials into the AHRS database; and the development of potential mitigation strategies for specific sites and property types.

Information sharing for the project will draw on existing and new media contacts to promote conservation and stewardship, offer public programs, disseminate data through public websites, share information through preservation partnerships and opportunistic conference participation, and offer dedicated courses in maritime heritage preservation. In the final project year, the team will design interpretive panels based on the project and its results, and will look to develop partnerships with coastal museums for an independently funded traveling exhibition on Alaskan coastal and maritime heritage. Technical data from the project will be incorporated into the AHRS database for permanent access by environmental planners and other authorized users. The

final report "Coastal and Maritime Cultural Resources in Alaska: Threats and Opportunities for the Twenty-First Century" will synthesize project results, and offer planning and management recommendations. It will be published and distributed in electronic format.

Project Goals:

- Expand and improve the quality of the Alaska Heritage Resources Survey (AHRS) database coverage of coastal and maritime cultural resources
- Assess existing and future threats to Alaska's coastal and maritime cultural resources
- Promote and expand public understanding and active stewardship of coastal and maritime heritage sites
- Make long-term enhancements to the capacities of the Office of History and Archaeology (OHA) and other agencies to manage and conserve coastal zone cultural resources

Tangible and Lasting Results:

Data and products from this project (e.g., site records, databases, photographs, GPS data, and management recommendations) will enhance the State's ability to plan for and mitigate adverse effects and threats to heritage sites from natural and anthropogenic processes such as development, hazardous substance spills, erosion, and global climate change. The data will directly benefit agencies, local governments, and corporations planning for offshore oil and gas development, the preparation of hazardous substance spill contingency plans, and planning for economic development within the coastal zone. A more accurate and complete AHRS database will facilitate expedited and improved environmental planning for coastal zone projects. On a broader level, the project begins to address recommendations by the Technical Work Group on Health and Culture to the Governor's Panel on Climate Change. The improved public stewardship of Alaska's coastal heritage sites, achieved through new and strengthened OHA partnerships and outreach programs, will enhance site conservation and appreciation in Alaska's coastal communities.

MEASUREABLE GOALS AND OBJECTIVES

- 100 field investigations resulting in new or updated AHRS database records (25 per year)
- 100 backlog records, in addition to above, entered into the AHRS database (25 per year)
- 4 submerged sites investigated and assessed (1/Yr.)
- New site data and supporting materials from field investigations filed at OHA and available to authorized users *by the end of each project year*
- 4 public lectures promoting site stewardship, one in each work region (1/Yr.)
- 2 cooperatively taught OHA/NOAA maritime heritage courses, the first in Project Year 1
- Website focusing on coastal and maritime heritage sites
- Design for interpretive museum panels/or collaboration agreement with museums for traveling maritime heritage exhibition (year 4)
- Final report and handbook for managers and environmental planners entitled, "Coastal and Maritime Cultural Resources in Alaska: Threats and Opportunities for the Twenty-First Century"

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

The proposed project is consistent with Authorized Use No. 1, "*Projects and activities for the conservation, protection, or restoration of coastal areas, including wetland."* The data resulting

from the project will allow land and resource managers to make meaningful conservation, protection, and restoration decisions involving cultural resources when planning for development, or to mitigate the effects of oil spills and other disasters. The collected data will also allow managers to develop long-range plans for prioritizing sites for conservation and mitigation of the cumulative effects of climate change and related natural processes.

The MMS provided the state (DCOM) additional guidance on Authorized Use No. 1 in a cover letter that accompanied the Coastal Impact Assistance Program State Plan Guidelines: "Particular categories of potential projects may be considered if they demonstrate a direct or indirect link to the natural and coastal environment. ***Such projects may include*** public access to the natural and coastal and marine environment, public recreation, in the marine and coastal environment, and ***cultural (including subsistence) and archaeological restoration, protection and education, and safety***" [emphasis added].

Cultural heritage Tier 1 projects have been undertaken in Mississippi, and archaeological investigations have been minor components of grant projects in Florida, Alabama, and California. In Alaska, the North Slope Borough has proposed a Tier 1 project to address erosion of coastal archaeological sites. The OHA project, which is broader in scope and includes only areas along Alaska's western and gulf coasts, compliments but does not overlap with or duplicate the North Slope Borough project.

Archaeological survey in Alaska is challenging due to vast distances and complicated, expensive logistics. OHA, charged with managing archaeological and historic properties on state lands (including tidelands and submerged lands) and with federal responsibilities for the review of development projects, does not have the staff or funding to conduct independent survey and inventory projects, nor does OHA have staff expertise specific to maritime heritage. Without grants or other outside funding, and collaborative partnerships, OHA is not able to undertake this type project.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

OHA routinely collaborates with federal agencies on projects. Past federal partners have included the NPS, USFS, USFWS, MMS, BLM and NOAA. In particular, several NOAA programs have provided invaluable advice, funds and technical assistance for documenting marine sites. This project will partner with the NOAA Maritime Heritage Program. Other federal partnerships will be developed after initial data analysis and the selection of specific segments for field investigation. Letters from some potential federal partners are attached.

COST SHARING OR MATCHING OF FUNDS

We do not anticipate that CIAP funds will be used for cost sharing or match in combination with any other federal funds. For Project Year 4, we may seek funds from a nonprofit foundation to develop a collaborative museum exhibit that compliments the project.

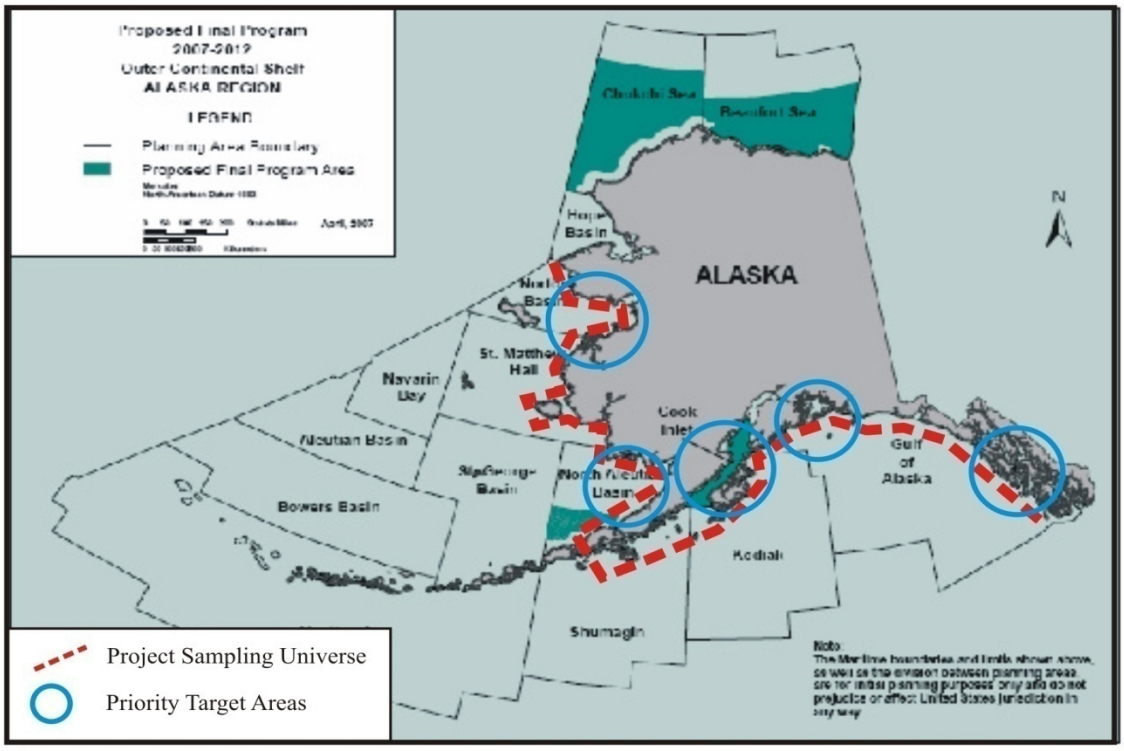


Figure 1. OCS planning area map showing the project sampling universe and probable target areas.

Figure 2. Example of prehistoric intertidal fish traps, Etolin Is., Gulf of Alaska. Photo courtesy Mark McCallum, U.S. Forest Service

Figure 3. Remnants of gold rush era steamships, St. Michael.
Photo courtesy Robert D. Shaw

Figure 4. Eroding and vandalized prehistoric archaeological site on Shuyak Island.
Note midden deposits and human skulls at arrow.
Photo courtesy Kevin Murphy, Alaska State Parks.

Figure 5. Archaeological site on Nuka Island, submerged due to subsidence. Photo by D. McMahan, 1990

Figure 6. Eroding prehistoric archaeological site near Seldovia, Kachemak Bay. Photo by D. McMahan, 1990

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Transportation and Public Facilities

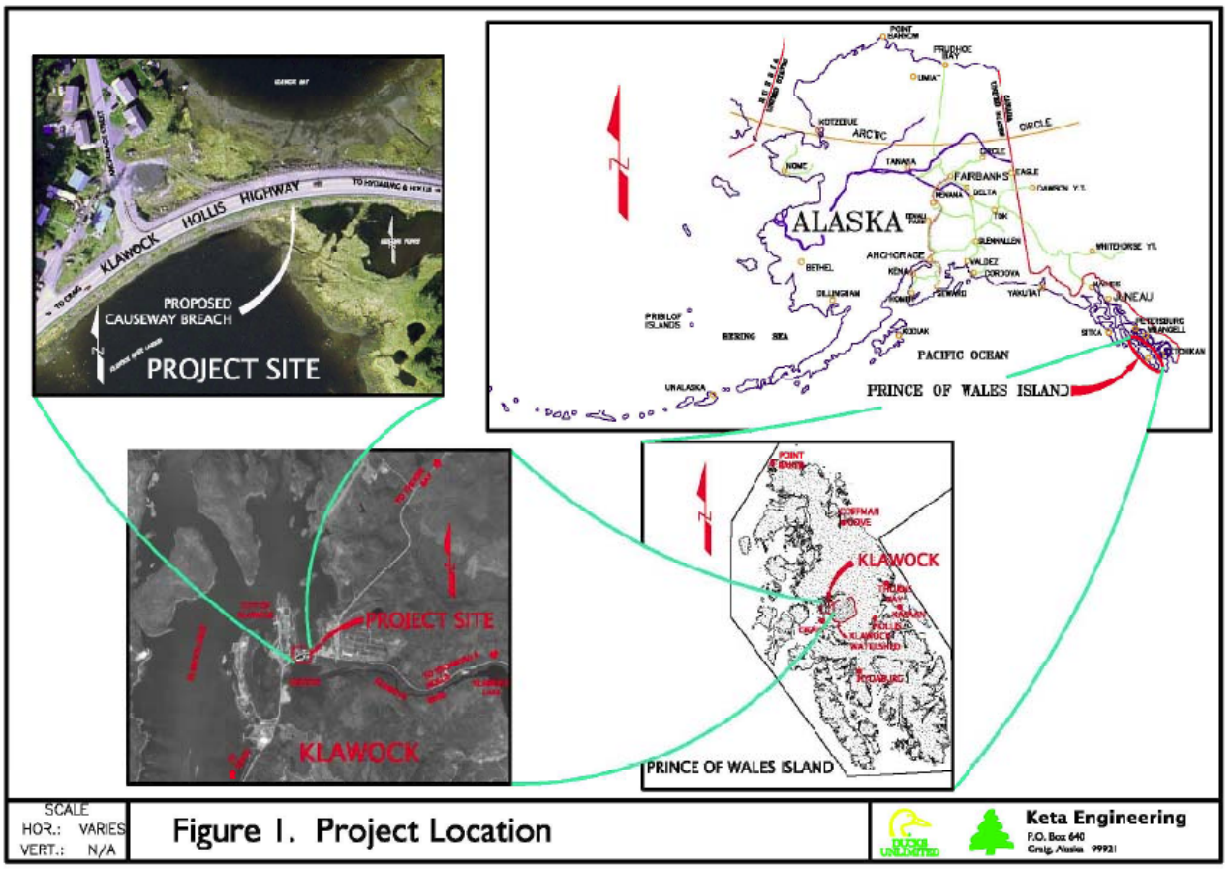
PROJECT TITLE: Klawock Estuary Restoration

PROJECT CONTACT

Contact Name: Greg Lockwood, P.E.
Address: P.O. Box 112506, Juneau, AK 99801
Telephone Number: (907) 465-2393
Fax Number: (907) 465-4414
Email Address: greg.lockwood@alaska.gov

PROJECT LOCATION

This project is located on a natural isthmus between the community of Klawock and the remainder of Prince of Wales Island, Southeast Alaska. It is bounded by Klawock River estuary to the south and Klawock Bay to the north. See Figure 1 below.



PROJECT DURATION
We anticipate this project will take two years. The first year will be spent completing design and obtaining proper permits. Construction and project closeout will occur during the second year.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$ 885,193	$129,262	$755,931	0	0

PROJECT DESCRIPTION
The community of Klawock is located on a false island of Prince of Wales Island, which is connected to Prince of Wales by a narrow isthmus and roadway that is dry at all tides. Historically, the isthmus was flooded at higher tidal stages, which allowed out-migrant fish to move quickly to access eelgrass habitat and in-migrating fish to move directly into the river. Construction of the Klawock-Hollis highway along the isthmus in 1964 raised its elevation and completely blocked tidal flow and fish passage across the isthmus.

The goal of the proposed project is to renew fish passage through the earthen isthmus causeway, through a concrete box culvert. The proposed project will allow direct tidal exchange and fish passage through the causeway at higher tidal stages by installing a concrete structure. In particular, this will allow out-migrating juvenile fish, at a vulnerable stage of their life histories, to access 460 acres of eelgrass habitat that lies immediately seaward of the causeway.

The project would also allow adult salmon passage to the Klawock River through the causeway. Improved access for out-migrating juveniles corresponds to improved access for returning adults, who will more easily reach the more than 65 miles of Class I and II stream and lake habitat. Also, the project is likely to result in increased salinities in the Klawock River lagoon that promote establishment of eelgrass beds in this portion of the estuary. Eelgrass is currently absent from the Klawock River lagoon (inner estuary). Although many eelgrass physiological processes can occur at low salinities, maximum net production occurs at 31 parts per thousand (seawater). It is likely that pre-causeway salinities in the inner estuary were higher and eelgrass more extensive. Therefore another positive outcome of the fish passage structure could be a more favorable habitat for eelgrass and hence an improved fish rearing habitat within the inner estuary. While this is designated Essential Fish Habitat for salmon, greater access to existing eelgrass beds may also benefit fish other than salmonids, including juvenile rockfish and forage species important to commercial fish stocks. In 2005 Keta Engineering was retained by Ducks Unlimited, Inc. (DU) in service to the Alaska Trollers Association to evaluate and design pre-selected alternatives to provide fish passage through the causeway with the goal of restoring fish passage to pre-causeway conditions. A copy of the design report is included with this proposal.

All design alternatives initially considered by this study were pre-selected by DU, the Klawock Watershed Council and various members of State and Federal agencies. These alternatives

consist of different configurations of standard corrugated-metal drainage structures and another alternative using a pre-cast concrete structure. Corrosion is an important consideration, so all design alternatives were evaluated using aluminum or concrete. To replicate the hydraulic conditions that existed prior to construction of the highway, flows from the selected culvert design to Klawock Bay will be controlled via an earthen weir within the structure. The alignment and elevation will be such that the culvert will perform in concert with the existing pond to pass water and fish between the lagoon and Klawock Bay in either direction given favorable tidal conditions.

Several milestones including local coordination and 70 percent engineering design are already complete. The remaining milestone (final design, contract development and permitting) can be completed in CIAP Project Year 1. Construction and project closeout can be completed in CIAP Project Year 2

This project has very strong local, in-kind, and financial support. Letters of support for this project have been written by the following entities and are available upon request:

Alaska Trollers Association
Klawock Watershed Council, Board of Directors
City of Klawock
The Nature Conservancy
U.S. Fish and Wildlife Service
Klawock Community Association

Significant past in-kind staff support has already been committed by:

Alaska Department of Transportation
Klawock Watershed Council
U.S Forest Service
Alaska Department of Fish and Game
Prince of Wales Hatchery Association
US Fish and Wildlife Service
The Nature Conservancy

MEASUREABLE GOALS AND OBJECTIVES

This project will result in a culvert that will allow out-migrating juvenile salmon (including sockeye and coho) to access 460 acres of eelgrass habitat that lies immediately north of the existing causeway.

The project would also allow adult salmon upstream passage to the Klawock River through the causeway. Improved passage for both anadromous and migratory resident fish will allow upstream movement to more than 65 miles of Class I (anadromous) and Class II (resident) stream and lake habitat. Also, the project is likely to result in increased salinities in the Klawock River lagoon that promote establishment of eelgrass beds in this portion of the estuary.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

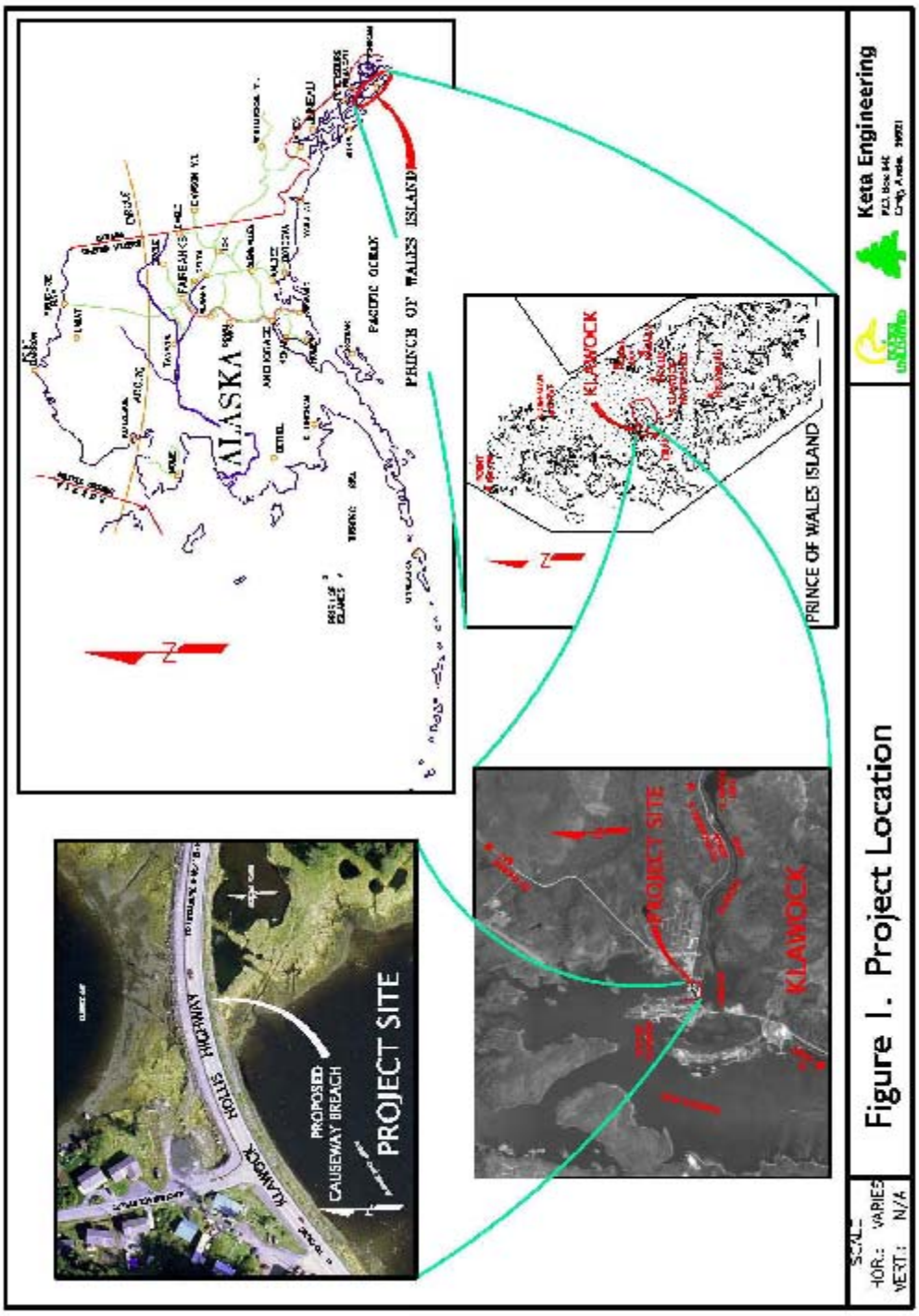
This project is consistent with CIAP Authorized Use #1 "*Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands".*
The existing highway causeway blocks 100% of the hydrologic exchange of flows and fish passage between Klawock Lagoon and the bay to the north. If constructed today, this highway would not likely be founded upon a solid fill causeway over estuarine wetlands. This project offers the opportunity to partially reclaim the original environmental condition through the construction of a large concrete culvert which will link Klawock River estuary to Klawock Bay to the north. This connection will allow tide-dependent flow exchange between the two water bodies and as well as allow fish passage into and out of the Klawock River estuary.

The opportunity to concurrently restore hydrologic function and improve migration of juvenile salmon to 460 acres of eelgrass habitat is exceedingly rare.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS
This project was originally identified by the Alaska Department of Fish and Game in a 2000 memorandum to Alaska Department of Transportation requesting that this project be included on the Statewide Transportation Improvement Plan. In 2002, an earmark from Senator Stevens was granted to the Alaska Trollers Association via the U.S. Fish and Wildlife Service for the purpose of furthering habitat restoration in the Klawock watershed. This earmark paid for Duck Unlimited and a subcontractor to work on survey and the engineering design documents in 2005-6 in collaboration with the US Fish and Wildlife Service Fish Passage Program. Thus, past federal investment has developed this project to the level where it can now be successfully completed (including design, permitting, and construction) with assistance from the CIAP.

This project has also been identified as the highest remaining priority in the Klawock Watershed Council's Klawock Watershed Restoration Plan (2005), which was funded through the NOAA Pacific Coast Salmon Recovery Fund. The Klawock watershed also scored the highest among the watersheds included in the Nature Conservancy's Prince of Wales Restoration Priorities report (2008).

COST SHARING OR MATCHING OF FUNDS
With full investment by CIAP, we do not anticipate needing additional funding. The Southeast Sustainable Salmon Fund has already granted the Klawock Watershed Council approximately $170,000 in support of this project. The US Fish and Wildlife Service Fish Passage program is committed to this project and can supplement CIAP funding for any out-year cost increases.


ALASKA
PACIFIC OCEAN
PRINCE OF WALES ISLAND
KLAWOCK
PROJECT SITE
PROPOSED CAUSEWAY BREACH
KLAWOCK HOLLIS HIGHWAY
Figure 1. Project Location
Keta Engineering
SCALE:
HOR.: VARIES
VERT.: N/A

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Fish and Game
Division of Subsistence

PROJECT TITLE: Chukchi Sea & Norton Sound Community Observation Network

PROJECT CONTACT

Contact Name: Jim Simon, Ph.D.
Address: 1300 College Road, Fairbanks, Alaska 99701
Telephone Number: (907) 459-7317
Fax Number: (907) 459-7331
Email Address: james.simon@alaska.gov

PROJECT LOCATION

This project will take place in 12 communities within coastal management districts of the North Slope Borough, Northwest Arctic Borough, and Norton Sound, including Nuiqsut, Wainwright, Point Lay, Point Hope, Deering, Kobuk, Noorvik, Selawik, Diomede, Golovin, Shaktoolik, and Stebbins. Data on coastal fish and wildlife resources and the environment will be collected throughout much of these coastal management districts due to the extensive subsistence uses that take place throughout these regions.

PROJECT DURATION

This project will take 4 years to complete.

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$1,592,352	$372,096	$352,944	$499,320	$367,992

PROJECT DESCRIPTION

This project will improve understanding of fish and wildlife resources that are potentially impacted by resource development activities in the Chukchi Sea and Bering Sea. Systematic documentation of coastal community environmental information to enumerate fish and wildlife harvests, document local observations of changes in the environment, including resource population dynamics, animal health and condition, seasonal and geographic resource distribution, detection of invasive species, and map community subsistence resource and land use patterns will improve knowledge of species of conservation concern. Such baseline data also will assist in developing strategies to mitigate potential effects of resource development and assist in the sustainable management of the environment and public resources.

During the past three decades, the ADF&G Division of Subsistence's research program has documented community patterns of fish and wildlife harvest and use, including local knowledge

about fish and wildlife habitats and ecosystem changes throughout much of Alaska; however, information gaps still exist or information is significantly out of date. This project will increase knowledge by conducting comparable research in 12 additional communities along the Chukchi Sea coast and in Norton Sound, with a combined estimated human population of 23,304 in 2007. Based upon existing information, some of the largest per capita harvest and use of fish and wildlife resources in Alaska occurs in these regions with an estimated 516 pounds per person per year compared to a statewide average rural Alaska harvest of 375 pounds per person per year. This project will result in documenting comprehensive subsistence baseline information and local environmental observations from 12 communities, which also will serve as proxies for similarly situated communities in the coastal management districts for which limited or no information exists.

This project will result in systematic household surveys and interviews with approximately 1,164 households in 12 communities along the Chukchi Sea coast, Bering Strait, and Norton Sound. Local subsistence users have maintained close ties to the environment for generations in order to effectively utilize fish and wildlife resources that are vital to the mixed subsistence-market economies characteristic of Arctic communities. As a result, systematic documentation of this local and traditional ecological knowledge provides local, state, and federal governments and organizations with a network of environmental observations and quantitative and spatial data that will assist in evaluating and monitoring environmental impacts associated with development activities and a changing climate.

This project will take place over 4 years. Year 1 activities will focus upon soliciting all 12 community approvals to participate in the project with the assistance of the regional organizations, including the Inupiat Community of the Arctic Slope and the North Slope Borough's Wildlife Management Department, Maniilaq Association, and Kawerak. Year 1 activities also will include the selection and training of community-based research assistants to commence household harvest surveys and mapping interviews in 4 of the 12 communities and commence data entry and analysis. Year 2 activities will focus on initiating data collection in 4 additional communities and finalize data analysis of information collected during Year 1 and commence data entry and analysis of Year 2 data. Year 3 activities will focus on initiating data collection in the remaining communities and completing the data analysis of Year 2 data and most of Year 3 information. Year 4 activities will finalize any remaining data analysis and focus on interpreting research results and finalizing research findings in a written technical report, conduct community reviews of research findings with the assistance regional organizations identified above, as well disseminate research results through a web-accessible Community Subsistence Information System and a geodatabase of spatial environmental information.

MEASUREABLE GOALS AND OBJECTIVES

This project will result in documenting comprehensive subsistence baseline information and local environmental observations from 12 communities (approximately 1,164 households) over a four year period. Data collected will include estimated total wild food harvest quantities, locations of harvests, numbers of harvesters, household demographic and economics, and local observations and assessments of resource status and health. Specific outcomes of this project will include a comprehensive technical report summarizing research results at the community level as part of the ADF&G Division of Subsistence's web-accessible Technical Paper series,

comprehensive community harvest information in the division's web-accessible Community Subsistence Information System, and maps of community resource and land use activities and environmental observations in a forthcoming web-accessible geographic information system (geodatabase) by the end of Year 4. This comprehensive research project is not associated with annual measurable outcomes as data collection, data analysis and interpretation will take place on an ongoing basis throughout the life of the project culminating in the final measureable outcomes as outlined above.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with CIAP authorized use number 4, *Implementation of a federally-approved marine, coastal or comprehensive conservation management plan.*

This research will support implementation of the state standards of the Alaska Coastal Management Program (ACMP), specifically the state's subsistence standard, at 11 Alaska Administrative Code (AAC) 112.270. The state standards are the cornerstone of the federally approved coastal program and are the means by which the program is implemented. The mission of the ACMP is to provide stewardship for Alaska's rich and diverse coastal resources to ensure a healthy and vibrant Alaskan coast that efficiently sustains long-term economic and environmental productivity. Implementation of the ACMP is intended to result in a benefit to the coastal environment. The state subsistence standards state the following:

> ***11 AAC 112.270 Subsistence***
> *(a) A project within a subsistence use area designated by the department or under 11 AAC 114.250(g) must avoid or minimize impacts to subsistence uses of coastal resources.*
> *(b) For a project within a subsistence use area designated under 11 AAC 114.250(g), the applicant shall submit an analysis or evaluation of reasonably foreseeable adverse impacts of the project on subsistence use as part of*
> *(1) a consistency review packet submitted under 11 AAC 110.215; and*
> *(2) a consistency evaluation under 15 C.F.R. 930.39, 15 C.F.R. 930.58, or 15 C.F.R. 930.76.*

The information gathered will provide the baseline information needed by the Department of Natural Resources and the coastal districts of the North Slope Borough, Northwest Arctic Borough, and Bering Straits Coastal Resource Service Area to formally designate subsistence use areas. Per the ACMP, an evaluation of impacts to subsistence uses from development proposals and the required avoidance or minimization of such impacts, is only required if an area has been designated as a subsistence use areas, making designation an imperative first step to implementing the subsistence standard of the ACMP.

This project also will assist in mitigating potential environmental impacts associated with future coastal and land development activities. This research also will serve to provide detailed data pertaining to subsistence uses authorized in the U.S. Fish and Wildlife, Selawik National Wildlife Refuge Comprehensive Conservation Plan (CCP) approved in 1987 and inform its ongoing revision scheduled for completion in the summer of 2010.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

Coordination between ADF&G Division of Subsistence and the federal Office of Subsistence Management is an ongoing activity given that research results associated with projects like that proposed here are important to both state and federal fish and wildlife management and comprehensive conservation planning and management programs. ADF&G Division of Subsistence also has coordinated with Tammy Davis, Project Leader for the Invasive Species Program in the ADF&G Division of Sport Fisheries, in order to deploy that program's invasive species detection protocols.

COST SHARING OR MATCHING OF FUNDS

CIAP funds associated with this project will not be used for cost sharing or matching purposes.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Arctic Field Office
1150 University Avenue
Fairbanks, Alaska 99709-3844
http://www.blm.gov/ak

TAKE PRIDE IN AMERICA

Jim Simon, Subsistence Regional Program Manager
Division of Subsistence
Alaska Department of Fish & Game
1300 College Rd Fairbanks, AK 99701-1599

Dear Dr. Simon:

The BLM Arctic Field Office is pleased to write this letter of support for your proposed project entitled *Community Subsistence Harvest Monitoring and Environmental Observation Network,* submitted for funding to the Coastal Impact Assistance Program by the Alaska Department of Fish and Game, Division of Subsistence. One of the challenges that we face in managing oil and gas exploration and development in the National Petroleum Reserve-Alaska (NPR-A) is the lack of current and relevant subsistence harvest data for communities both in and adjacent to the reserve. This project would provide greatly needed information that would be used by the BLM in future land use planning, permitting, and environmental reviews, furthering our ability to develop oil and gas resources in the NPR-A.

It is well-known in the Alaskan biological and social science community that the Division of Subsistence is the primary research entity with the specialized expertise to collect, analyze, and produce information regarding subsistence harvests by residents of the state. The expertise of Division employees includes a fundamental understanding of fish and wildlife harvesting by rural communities, local politics and other social factors, and a proven track record of disseminating information on a timely basis through their Technical Report Series.

Past research by the Division is used extensively by the BLM to analyze impacts to local harvesting from proposed oil and gas activity, and to manage conflicts between subsistence users and industry in the NPR-A. For some communities, the most recent harvest numbers and use area maps are greater than 20 years old. The updated information that would result from this proposed monitoring project will be useful now and for the next 20 years, and will provide much needed data to further the economic goals of both the State and Federal governments in Alaska.

Sincerely,

Lon Kelly, Manager
Arctic Field Office

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Natural Resources, Division of Forestry

PROJECT TITLE: Kenai Forest Road Condition Survey

PROJECT CONTACT

Contact Name: Greg Staunton
Address: 2417 Tongass Avenue Suite 213, Ketchikan, AK, 99901
Telephone Number: (907) 225-3070
Fax Number: (907) 247-3070
Email Address: greg.staunton@alaska.gov

PROJECT LOCATION

The Kenai Peninsula area located south of Soldotna, Alaska and north of Homer, Alaska and entirely within the coastal zone. See attached map.

PROJECT DURATION

2 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$256,000	$124,000	$132,000		

PROJECT DESCRIPTION

The purpose of the project is to survey the condition of 370 miles of existing forest roads related to affects on water quality, fish habitat, and fish passage. The project as proposed is to be conducted in conjunction with the Department of Natural Resources (DNR) – Division of Forestry (DOF), Department of Fish and Game (ADF&G) – Habitat Division and covers all non-federal lands on the Kenai Peninsula. The roads proposed to be surveyed are gravel and dirt logging roads that were constructed on private and public land in the 1980's and early 1990's. The majority of the roads were constructed during a relatively narrow time frame in response to land owner's efforts to recover timber value after the spruce bark beetle epidemic that has killed off 1.2 million acres of the timber on the Kenai Peninsula in the last two decades. The majority of the roads were minimal standard roads constructed under the Forest Resources and Practices Act (FRPA). The survey project involves collaboration of local, state, and tribal governments, landowners, the timber industry, and other involved stakeholders to monitor the condition of forest roads and fish passage structures.

This project provides essential field data, which will be used to identify risks to and the condition of water quality and salmon habitat on the Kenai Peninsula from forest roads. The information will identify and prioritize the implementation of Best Management Practices (BMPs) and restoration projects necessary for protection of water quality and fish habitat.

Methods/Modeling

1. Prioritization of Fieldwork: DOF will work with ADF&G Habitat to prioritize field survey efforts related to fish habitat on the Kenai Peninsula. DNR and ADF&G will incorporate water quality and stream buffer considerations (as required under the FRPA) into the prioritization process for this project. This project does not address monitoring related to federal lands or non-forestry activities. For example, fish passage and road construction issues related to state highways have been excluded from this project since the FRPA does not pertain to them. Current satellite or aerial imagery will be purchased based on FRPA records of forest activity and fish habitat potential. Field work will be prioritized based on structures identified through photogrammetric analysis.
2. Road Condition Protocols: The Tongass Road Condition Survey (RCS) will be utilized as the protocol for the sampling of the drainage structures on the Kenai. The RCS was jointly developed by the USDA Forest Service, ADF&G, and DEC with funding by the U. S. Environmental Protection Agency (EPA). This protocol forms the core method for road and culvert surveys on the Tongass National Forest, and has been used to assess thousands of miles of road in the Tongass as well as approximately 3,000 culverts. The RCS protocol also forms the base protocol for road and culvert surveys performed under the FRPA monitoring program and other programs on non-federal lands. This project includes modification of the RCS to conform to the FRPA for non-federal land applications, while maintaining data compatibility with information collected on federal lands.
3. Fish Passage Assessment: Fish passage assessment criteria have been developed and used extensively between the ADF&G and the Forest Service on the Tongass National Forest. The same fish passage criteria will be used on this survey.
4. Prioritized List of Remediation/Restoration Needs: This project will identify structures that fail to provide efficient fish passage or are likely to restrict passage in the near future (<5 years) for salmon and will assist in prioritizing these structures for remediation or restoration. An initial prioritized list of restoration projects will be developed based on factors such as the amount and quality of habitat upstream of the structure, the cost of restoration, logistics, and other factors. This list will provide a basis for proposing fish passage restoration projects and will assist in watershed assessments under the Annual Salmon Habitat Assessment and Alaska Clean Water Actions (ACWA) until an integrated restoration/ rehabilitation prioritization process and program can be developed and funded.

This project is patterned after sampling that has been ongoing in southeast Alaska since 1999 on Federal, State and private land through the Southeast Sustainable Salmon Fund. This format is a proven platform that allows agencies and landowners to better track and fix road maintenance issues that affect water quality, fisheries and coastal resources.

Milestone #1 Jointly with Habitat, prioritize efforts to address water quality and stream buffer considerations (as required under the FRPA) with Habitat fish passage priorities. Spring Year1
Milestone #2 Conduct analysis of proposed monitoring sites using existing remote sensing data (satellite imagery, aerial photography, etc.) or other appropriate techniques, such as fixed or rotor wing flyovers. Purchase aerial imagery of the project area as necessary. Summer Year 1
Milestone #3 Analyze imagery and prioritize data collection. Winter Year1

Milestone #4 Edit the existing GIS dataset of forest roads produced by the Kenai Peninsula Borough to accommodate status information, condition and other associated information for all non-federal forest roads. Adapt and develop hand held data recording software for the efficient field procurement of road information. Winter Year1
Milestone #5 Coordinate field activities with agencies and landowners. Spring Year 2
Milestone #6 Conduct field monitoring of prioritized sites to determine implementation and effectiveness of the FRPA in protecting water quality and fish habitat. Summer Year 2
Milestone #7 Identify and prioritize enforcement and restoration efforts needed to protect salmon habitat and ensure adequate fish passage. Fall Year2
Milestone #8 Make recommendations for additions, changes or modifications to existing BMP's and regulations. Winter Year2
Milestone #9 Tie Data in with the ADF&G SSSF Arc IMS site. Winter Year 2

The proposed project populates a data base that will be maintained under DOF's statutory required administration of FRPA. ADFG will edit and maintain the atlas of anadromous fish as part of their statutory responsibilities under AS 16.05. The information developed under this project will enable DOF to solicit Federal, State, private and nonprofit funds to mitigate issues of water quality in an equitable manner by exercising FRPA enforcement authority. Due to the area's remote location and the physical extent of the roads, timely oversight of the area is not practical without a comprehensive survey of this nature.

MEASUREABLE GOALS AND OBJECTIVES

Project Goals

- Objective 1: Coordinate field activities with landowners, timber owners, forest operators and state agencies to monitor the condition of 370 miles of forest roads and fish passage structures.
- Objective 2: Jointly with ADFG, prioritize field efforts, enforcement and restoration to address water quality and fish habitat concerns (as required under the FRPA) with ADFG fish passage priorities.
- Objective 3: Develop a GIS dataset of forest roads and their status and condition for all non-federal forest roads in FRPA Region 2 on the Kenai Peninsula.
- Objective 4: Conduct field monitoring of prioritized sites to determine implementation and effectiveness of the FRPA in protecting water quality and fish habitat.

Measurable Outcomes

- Outcome 1: Identify sources of sedimentation into fish habitat and structures that prevent or will likely in the near future prevent efficient fish passage. Compile the information in a GIS data base that can be used by agency and various landowners to efficiently manage the structures on 370 miles of remote forest roads. (Year 1 and Summer of Year 2)
- Outcome 2: Identification and prioritization of remediation and restoration needs by property owners. (End of Year 2)
- Outcome 3: Provide information for analyzing the effectiveness of road construction and road maintenance BMPs. Make recommendations for additions or modifications to existing State BMP's and regulations. (End of Year 2)

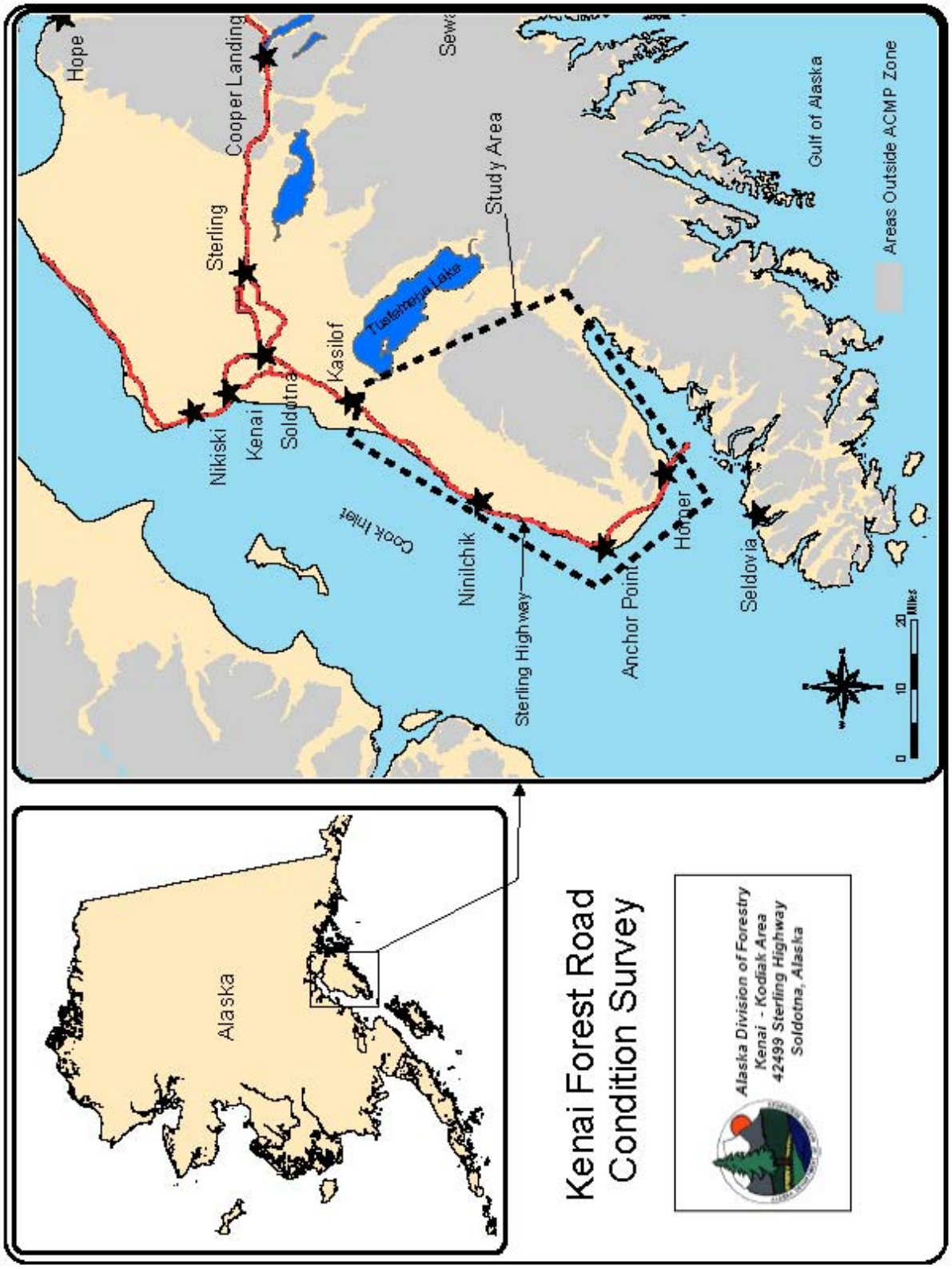
PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE
This project is consistent with Authorize use #1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetland*.

Due to the extensive and remote nature of the Kenai road system along with the lack of recent commercial forest activity, the road infrastructure has not been inspected for compliance since it was initially harvested in the mid 1990's. During that time it has been inferred by DOF that maintenance has generally been deferred due to the decline in operability of the timber resource. The style of construction used for the drainage structures is also approaching the end of its lifespan by accepted industry standards.

This project's end goal is to determine the current implementation and the effectiveness of the FPRA road standards in Region 2. DOF has FRPA enforcement mechanisms and endeavors to have full compliance with FRPA BMPs. Maintenance of forest roads and drainage structures are a key element of FPRA. Two of the statutory goals of the FRPA are control of non point pollution and the establishment of fish habitat protection standards on forest operations. This project quantifies the implementation and effectiveness of those standards on a region wide basis and makes recommendations for their improvement. An outcome of the measurements will be DOF's timely ability to collaborate with or enforce landowners to comply with the FRPA standards and improve water quality fish habitat. Good water quality is fundamental to maintaining robust and productive coastal habitat for a variety of species including fish.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS
The road condition protocol to be used on this project was developed by the USDA Forest Service, ADF&G, and DEC with funding by the U. S. Environmental Protection Agency (EPA). With their aid DOF adapted the protocol to private and state land in Southeast Alaska and now the Kenai. In designing this survey the DOF has collaborated with the National Resource Conservation Service and the Kenai Borough Bark Beatle Task Force.

COST SHARING OR MATCHING OF FUNDS
This is a stand alone grant request. The DOF will provide logistical and trained staff support for the facilitation of the work. CIAP funds associated with this project will not be used for cost sharing or matching purposes.


Hope
Cooper Landing
Sterling
Kenai
Soldotna
Kasilof
Nikiski
Tustumena Lake
Study Area
Cook Inlet
Ninilchik
Sterling Highway
Anchor Point
Homer
Seldovia
Gulf of Alaska
Areas Outside ACMP Zone
0
10
20
Miles
Alaska
Kenai Forest Road
Condition Survey
Alaska Division of Forestry
Kenai - Kodiak Area
42499 Sterling Highway
Soldotna, Alaska

COASTAL IMPACT ASSISTANCE PLAN

Department of Natural Resources
Parks and Outdoor Recreation Division

PROJECT TITLE: Crooked Creek State Recreation Site Bank Restoration

Note: This project is an expansion of the Kenai Peninsula Borough's CIAP project #3.

PROJECT CONTACT

Contact Name: Jack Sinclair, Park Area Superintendent
Address: P.O. Box 1247, Soldotna, AK 99669
Phone: (907) 262-5581
Fax: (907) 262-3717
Email: jack.sinclair@alaska.gov

PROJECT LOCATION

Crooked Creek is a tributary of the Kasilof River, which is located on the western Kenai Peninsula in southern Alaska. The Kasilof River begins at Tustumena Lake and flows northwest to Cook Inlet near the community of Kasilof. Both the Kasilof River and Crooked Creek are located within the coastal zone.

PROJECT DURATION

2 - Years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
250,000	$125,000	$125,000		

PROJECT DESCRIPTION

The Crooked Creek State Recreation Site (SRS), located at the confluence of Crooked Creek and the Kasilof River, provides outstanding bank fishing opportunities for thousands of Kenai Peninsula anglers. Over the past 3 years, this site experienced an average of 27,719 day-use visitors each year. Consequently, the closest and most convenient access points have suffered severe bank damage and loss of quality salmon habitat from undirected anglers. The site that is in greatest need of restoration is known locally as the "People's Hole."

Unlike the nearby Kenai River, the Kasilof River has received little attention and lacks the infrastructure to accommodate the public and minimize bank damage. The main goal of this proposal is to restore the People's Hole by recognizing that it has become a priority area of restoration for multiple entities, including State Parks, the Kenai Peninsula Borough's Coastal Zone Management, and the Kenai Watershed Forum (KWF) all of whom are contributing financially to this project.

Restoration of People's Hole is a multi-agency collaboration set to begin in 2009. The Kenai Peninsula Borough has committed a portion of its CIAP funds to this project. This funding will fund the restoration and enhancement of 250 feet of eroding bank. The Division of Natural Resources (DNR), working together with the Kenai Peninsula Borough, the Kenai Watershed Forum, and the Alaska Department of Fish and Game (ADF&G), will pool financial and technical resources to restore the riparian system functions that have been lost due to undirected access. These lost functions include soil/sediment retention, hydraulic complexity, and direct habitat loss for juvenile salmonids. Overall, DNR will work with the partners to restore a total of 750 feet of critical salmon habitat, while maintaining and directing appropriate angling accommodations along the bank including appropriately designed trails and elevated, light penetrating walkways. This proposal will support restoration and enhancement of 500 feet of the 750 total feet and will result in the complete restoration and enhancement of the damaged area.

The restoration will occur according to technical standards as described in the Streambank Revegetation and Protection, A Guide for Alaska, 2005 revised edition. The restoration will include the following:

- Installation of coconut fiber logs in tandem with spruce tree revetments. This will reduce water velocity and provide direct habitat for juvenile fish.
- Placement of live native willow as a brush layer that serves as a natural silt fence to minimize the chance of water turbidity cause from upland erosion.
- Placement of live native vegetated mats above the brush layers to hold moisture and stabilize the newly constructed shoreline.

The project will also include light penetrating walkways and stairs to enable anglers to access the river without trampling vegetation.

MEASURABLE GOALS AND OBJECTIVES
Note: The measurable goals below are in addition to those listed in the Kenai Peninsula Borough's Project #3.

Year 1:

- Apply for permits from Alaska Dept. of Fish and Game and U.S. Army Corps of Engineers in December 2009
- Submit project for Coastal Management Program Review in December 2009.
- Bid year one and two aspects of this project in April 2010.
- Let the bid to the best qualified low bidder in May 2010.
- Install barriers in areas slated for restoration in Year 2 so further trampling of the riverbank will not occur. Create at least one low impact access point for anglers to use during restoration.
- Restore 250 feet of riverbank by installing spruce tree revetment, coir log, willow brush layers and vegetated mat and other restorative measures as appropriate.
- Develop 100 LF of trails
- Install 150' LF of light penetrating walkway

- Install at least one sign at the restoration site to acknowledge the source of funding, to describe the purpose for the project, to direct fishers to appropriate access points, and to protect the area of restoration from access.

Year 2:

- Restore 150 feet of riverbank by installing spruce tree revetment, coir log, willow brush layers and vegetated mat and other restorative measures as appropriate.
- Develop 100 LF of trails
- Install 150 LF of light penetrating walkway and stairs.
- Maintain at least one sign to acknowledge the source of funding, to describe the purpose for the project, to direct fishers to appropriate access points, and to protect the restored area from access public access.
- Maintain at least one low impact public access point to the river to enable the public to access angling areas
- Maintain barriers around the restored area as needed to protect restored areas.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

The proposed project activities are most closely aligned with CIAP Authorized Use #1, *Project and activities for the conservation, protection, or restoration of coastal areas, including wetlands.*

This area has been heavily impacted by anglers for many years without riparian management to keep the river bank from being eroded by foot traffic. Over the past 3 years this site experienced an average of 27,719 day-use visitors. Consequently, the closest and most convenient access points have suffered severe bank damage and loss of quality salmon habitat from undirected anglers. The project will restore riverbank and riparian habitat along a portion of the affected area. This approach will protect the area being restored until it has returned to a natural state.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

The Division of Parks is coordinating this restoration with the Kenai Peninsula Borough and the Alaska Department of Fish and Game.

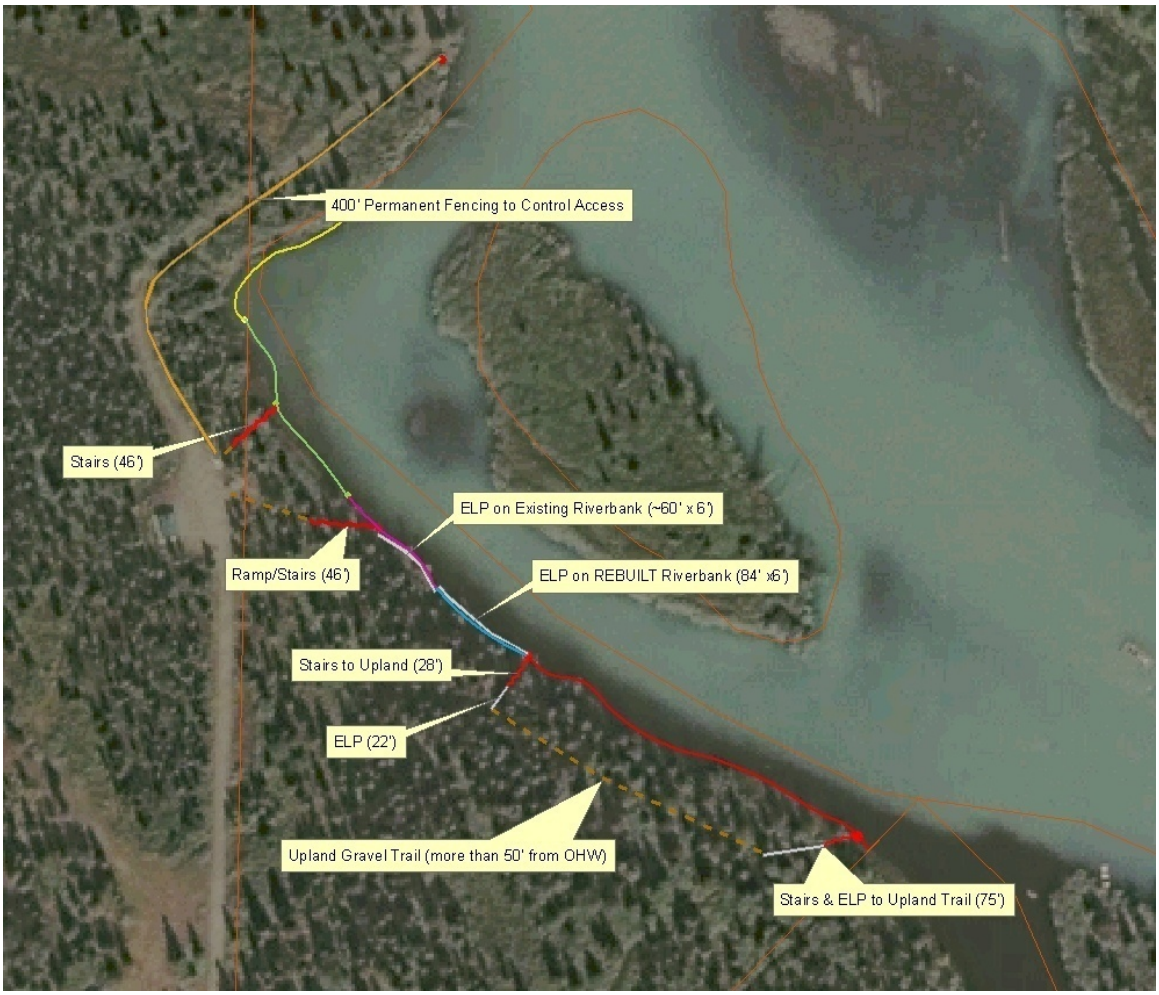
COST SHARING OR MATCHING OF FUNDS

The Kenai Peninsula Borough is contributing funds to this project. The Kenai Watershed Forum is contributing funding and personnel time to this project. CIAP funds associated with this project will not be used for cost sharing or matching purposes.

Crooked Creek SRS Bank Restoration Bio-revegetation Plan

Tier 2, Project 19

Crooked Creek SRS Bank Restoration Elevated Light-Penetrating Walkway Plan



STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Transportation and Public Facilities
Statewide Design and Engineering Services

PROJECT TITLE: Use of Beach Wildrye to Stabilize Coastal Berms

PROJECT CONTACT

Contact Name: Harvey Smith, P.E., State Coastal Engineer
Address: 5800 East Tudor Road, Anchorage, Alaska 99507-1286
Telephone Number: (907) 269-6239
Fax Number: (907) 269-6478
Email Address: Harvey.Smith@alaska.gov

PROJECT LOCATION

The project proposes to develop a procedure outlining the criteria and coastal engineering uses of a coastal berm stabilized using Beach Wildrye (a.k.a. Leymus mollis or synonymously Elymus arenarius). If funds allow, a small test berm will be constructed at Shaktoolik, Alaska, a coastal community in Norton Sound.

PROJECT DURATION

4 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$60,000	**$20,000**	**$20,000**	**$10,000**	**$10,000**

PROJECT DESCRIPTION

Coastal erosion is a growing concern in Western Alaska. This project proposes to develop criteria for use and stabilization coastal dunes using Beach Wildrye (a.k.a. Leymus mollis or synonymously Elymus arenarius). Using natural vegetation to improve the safety of coastal communities rather than hard structures such as armor rock, will maintain the environmental health of local beaches. Beaches are dynamically stable, and as such change constantly; this type of structure will allow natural fluctuations and coastal processes to continue uninterrupted and maintain community access to the beach and traditional uses of the coastal environment.

There is a strong movement to use bioengineered defenses rather than rock in the coastal environment. Beach wildrye is ideally suited to this application because it can be submerged in storm events or buried by sand. It is common on the northern coasts of Western Alaska. Creating a vegetated berm may be used to minimize the impact of driftwood and other debris. Or it may reduce the impact of storm surge events, if properly engineered.

The State Coastal Engineer will be the lead investigator. Work on this project will be coordinated with the Northern Latitude Plant Materials Center of the Alaska Department of Natural Resources, Division of Agriculture. Additionally, the ADOT&PF Northern Region, Alaska Department of Commerce, Community and Economic Development (ADCCED) and the Native Village of Shaktoolik will be consulted.

Critical to development and success of this project is development of criteria identifying when a vegetated dune may prove successful and will involve cooperation between the State of Alaska Coastal Engineers and state experts in soil management and field-crop production (Agronomists).

MEASURABLE GOALS AND OBJECTIVES

1. Develop a coastal engineering procedure and criteria for use and monitoring of a vegetated coastal berm and present in a report. Apply criteria and procedure to a project completed by the Alaska Department of Natural Resources in Adak Alaska.
2. If funds allow, design and construct a test berm in Shaktoolik, Alaska, this will include obtaining permits and developing plans and specifications.
3. If funds allow, monitor test berm by measuring sand accumulation for three years and present findings. This may be done in cooperation with local observers.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

This project is consistent with the following CIAP authorized uses 1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetland.*

This project supports the use of natural vegetation to improve the safety of coastal communities rather than hard structures such as armor rock. Natural vegetation will help maintain the environmental health of local beaches and protect coastal areas from erosion.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

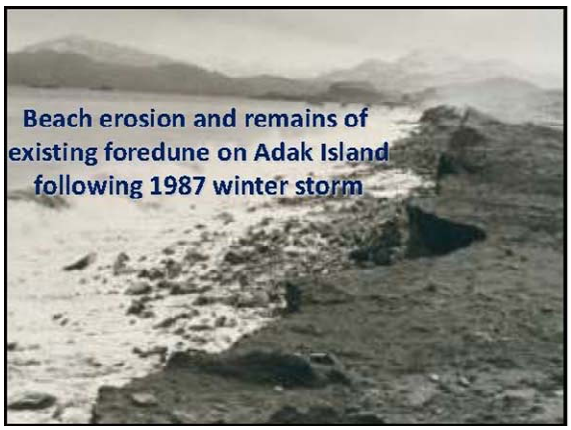
All applicable federal and state permits will be secured as part of this project.

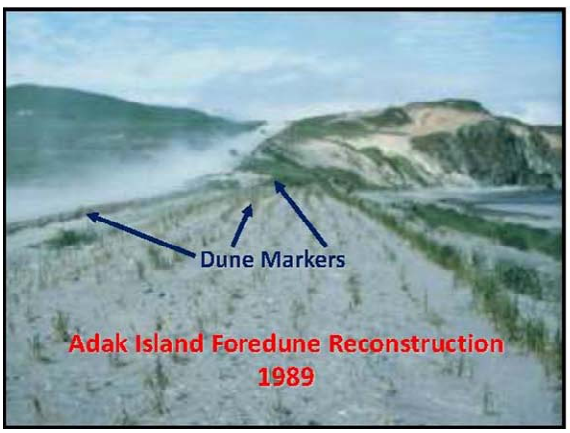
COST SHARING OR MATCHING OF FUNDS

Should costs exceed the proposed budget; this project will be reduced in scope or modified as needed. CIAP funds associated with this project will not be used for cost sharing or matching purposes.

Foredune Reconstruction Using Beach Wildrye Adak Island, Alaska

Photographs courtesy of
Stoney Wright, Agronomist
Northern Latitude Plant Materials Center
Alaska Department of Natural Resources
Division of Agriculture





From: Wright, Stoney J (DNR)
Sent: Monday, February 02, 2009 8:51 AM
To: Carter, Ruth A (DOT)
Cc: Smith, Harvey N (DOT)
Subject: Rest of day,

Ruth,
I'll be tied up on another major issue the rest of the day.
However, I fully support your "Beach Wildrye Berm Proposal" The resulting data and potential management practice development will be outstanding additions to the coastal erosion control practices in Alaska. The work will add to the knowledge base for the engineering uses and revegetation versatility of Beach Wildrye as a tool for erosion control. I will work with you any way I can to make this proposal a reality.
Stoney Wright

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Transportation and Public Facilities
Statewide Design and Engineering Services

PROJECT TITLE: Monitoring Storm Surge in Western Alaska

PROJECT CONTACT

Contact Name: Harvey Smith, P.E., State Coastal Engineer
Address: 5800 East Tudor Road, Anchorage, Alaska 99507-1286
Telephone Number: (907) 269-6239
Fax Number: (907) 269-6478
Email Address: Harvey.Smith@alaska.gov

PROJECT LOCATION

The project proposes to develop and install gauges to measure storm surge at up to eight locations in Western Alaska. The locations will be coordinated with Central and Northern Region offices of the Alaska Department of Transportation and Public Facilities with input from other local state and federal agencies. Sites may include Hooper Bay, Kivalina, Unalakleet, Point Hope Shishmaref, Mertarvik, Shaktoolik and Kotzebue.

The locations will be selected to correspond to coastal sectors identified in *Storm Surge Climatology and Forecasting in Alaska,* Wise, James, et al, Arctic Environmental Information and Data Center (AEIDC), University of Alaska, August 1981. This project will focus on communities in Sectors 2 through 11 (see Figure 1).

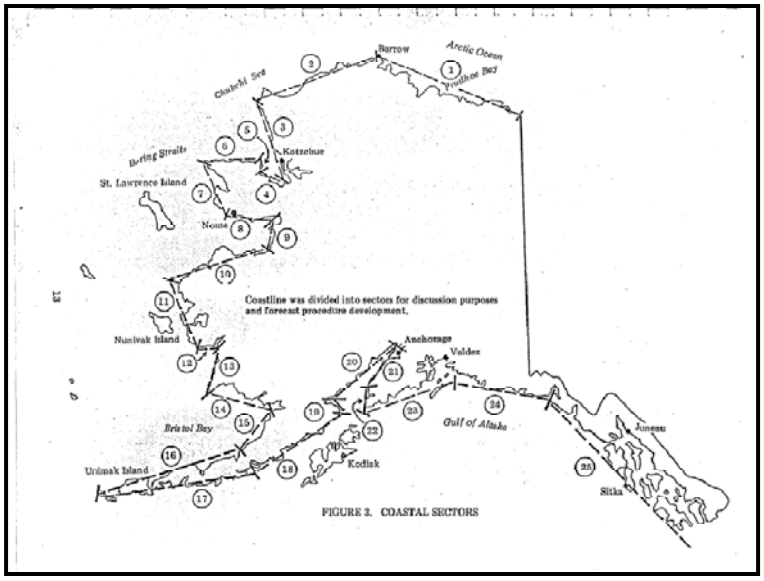


Figure 1: Coastal Sectors (Wise, et al.)

PROJECT DURATION

2 years

ESTIMATED COST

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$85,000	$45,000	$40,000		

PROJECT DESCRIPTION

Coastal erosion is a growing concern in Western Alaska; millions of dollars are being spent to study and possibly relocate coastal communities, build evacuation roads and shelters, and install hard coastal structures (rock revetments). In some cases this may not be necessary; however, there is too little data available to determine the risk of storm surge flooding to remote coastal communities. A trained coastal engineer can use this data to develop scenarios for protection of coastal communities and associated infrastructure rather than relocate them from their traditional homes.

This project proposes to develop a gauge to measure the depth of storm surge events near critical infrastructure or affected communities. Gauges will then be installed at various locations and monitored by locals. The gauges will be installed at locations accessible from shore in water depths between mean lower low water and mean sea level.

Data gathered through this project will be used by Coastal Engineers to validate the curves presented in Coastal Sectors Figure from *Storm Surge Climatology and Forecasting* in Alaska, Wise, James, et al, Arctic Environmental information and Data Center, University of Alaska, August 1981.

The data will further be used to improve risk analyses and the design of coastal infrastructure affected by storm surge events. Properly designed infrastructure can reduce the environmental footprint of a project as it traverses coastal plains.

MEASURABLE GOALS AND OBJECTIVES

1. Research and develop gauge to measure storm surge events.
2. Create instructions, criteria and checklist for local community observers
3. Coordinate field work, permits and training with communities; and then install gauges at up to eight communities.
4. Monitor gauges and collect data from local observers.
5. Present findings in technical paper.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE
This project is consistent with the Authorized Use #1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetland.*

The data will be used to improve risk analyses and the design of coastal infrastructure affected by storm surge events. Properly designed infrastructure can reduce the environmental footprint of a project. Coastal erosion in each of the eight communities has led to the contamination of coastal areas as structures and infrastructure fall into the ocean. Appropriate protection from storm surges can protect coastal areas from this potential contamination.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS
All applicable federal and state permits will be secured as part of this project.

COST SHARING OR MATCHING OF FUNDS
If possible, this work will be coordinated with active state projects to help reduce overhead costs. Should costs exceed the budget, fewer than eight sites will be gauged.

STATE OF ALASKA
COASTAL IMPACT ASSISTANCE PROGRAM

Alaska Department of Transportation and Public Facilities
Northern Region Planning

PROJECT TITLE: Erosion Protection and Stream Bank Restoration

PROJECT CONTACT

Contact Name: Paul Janke Address: P.O. Box 196900, Anchorage AK 99519-6900
Telephone Number: (907)269-0526
Fax Number: (907) 248-1573
Email Address: paul.janke@alaska.gov

PROJECT LOCATION

Parks Highway at Willow Creek. This site is within the coastal zone and is located within the Matanuska-Susitna Coastal District.

PROJECT DURATION

Two Years. This project is anticipated to require one year of Design/ Environmental work and one year for construction.

ESTIMATED COST

The costs for this project include contractor, indirect costs, and project management. DOT&PF has the administrative, project management and expertise to carry out this project.

Spending Estimate ($)				
TOTAL	**Year 1**	**Year 2**	**Year 3**	**Year 4**
$143,000	$35,000	$108,000	0	0

PROJECT DESCRIPTION

At Willow Creek, along the Parks Highway, an existing culvert and road are at risk of failure due to an eroding streambank. The streambank already shows evidence of erosion and a significant weather event could result in loss of road integrity. Should the culvert and road collapse, fish passage will be inhibited and habitat impacted by increased turbidity and sedimentation in the stream. This project seeks to restore the stream banks and protect the stream from additional impacts. This project consists of an initial scoping and reconnaissance phase to rigorously assess the extent of erosion and to develop engineering solutions for one site within the Southcentral region of Alaska. Upon completion of the reconnaissance phase, DOT&PF will generate plans, specifications and estimate documents of sufficient detail to issue a Request for Bids. The project will then install appropriate erosion mitigation to protect the threatened road embankments and restore the ecological integrity of the streambanks. See attached photos for specific details.

Restoration of the streambanks will result in creation of enhanced habitat and support the nourishment of the fisheries. The new habitat would be colonized by flora and fauna, and could provide greater productivity on a per area basis than the unconsolidated streambanks.

The Erosion Protection and Stream bank Restoration project was recommended by the Department of Transportation and Public Facilities (DOT&PF) Central Region Hydrologist, who works with the Alaska State Department of Fish and Game (ADF&G) to review engineering plans to ensure that streambank restoration is in compliance with the Memorandum of Understanding (MOU) that DOT&PF has with ADF&G. This agreement ensures that fish and wildlife resource values are properly addressed in planning, design, and construction of highway projects in accordance with the 1977 Clean Water Act Amendments.

MEASURABLE GOALS AND OBJECTIVES

This project will result in the scoping, design, and completion of a streamside erosion mitigation project at a site currently threatened by weather events. The specific method of protection will be determined during the scoping and design phases.

PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE

The Culvert restoration Project is consistent with the following CIAP authorized use #1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.*

This project will reduce the likelihood of a road washing out before it occurs. This will protect downstream coastal areas from the environmental impacts often associated with road washouts, such as water contamination, increased sedimentation and turbidity. The stream bank restoration effort will improve fish habitat.

COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS

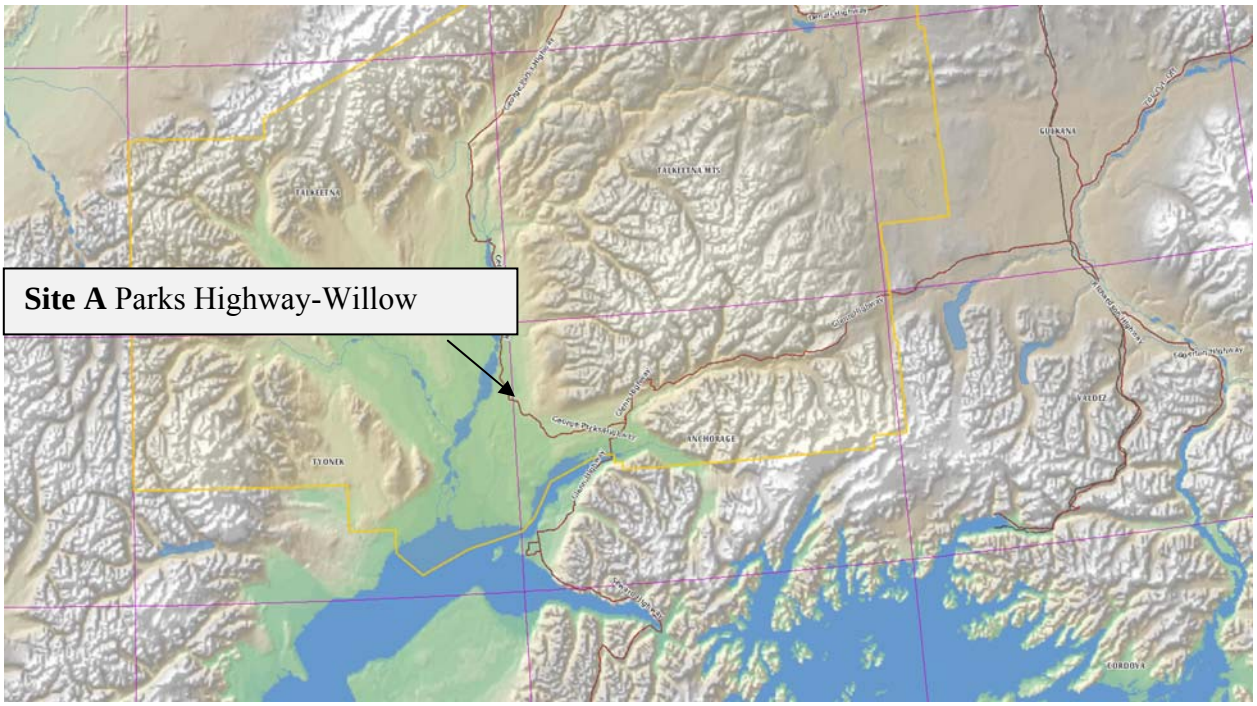
The Department works cooperatively with a number of local, state and federal agencies to identify issues of common concern. As a result of this on-going continuous cooperative process the Department has developed a professional protocol for problem identification and resolution. This nomination is a reflection of this on-going process.

All applicable federal and state permits will be secured as part of this project.

COST SHARING OR MATCHING OF FUNDS

The state will apply any available Maintenance and Operations funding to this project, should costs exceed the budget**.**

Figure 1
Location Map



Site A

Parks Highway Milepoint 72 – Willow Creek

Erosion Mitigation and Stream Bank Restoration Project